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EDUCATION
ITS DATA AND
FIRST PRINCIPLES



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EDUCATION :

ITS DATA AND FIRST PRINCIPLES

BY

THOMAS PERCY NUNN,

M.A., D.Sc.

PROFESSOR OF EDUCATION IN THE UNIVERSITY OF LONDON

AUTHOR OF "THE AIMS AND ACHIEVEMENTS OF SCIENTIFIC METHOD,"

"THE TEACHING OF ALGEBRA," ETC.

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EDITOR'S PREFACE

THE *Modern Educator's Library* has been designed to give considered expositions of the best theory and practice in English education of to-day. It is planned to cover the principal problems of educational theory in general, of curriculum and organization, of some unexhausted aspects of the history of education, and of special branches of applied education.

The Editor and his colleagues have had in view the needs of young teachers and of those training to be teachers, but since the school and the schoolmaster are not the sole factors in the educative process, it is hoped that educators in general (and which of us is not in some sense or other an educator?) as well as the professional schoolmaster may find in the series some help in understanding precept and practice in education of to-day and to-morrow. For we have borne in mind not only what is but what ought to be. To exhibit the educator's work as a vocation requiring the best possible preparation is the spirit in which these volumes have been written.

No artificial uniformity has been sought or imposed, and while the Editor is responsible for the series in general, the responsibility for the opinions expressed in each volume rests solely with its author.

ALBERT A. COCK.

UNIVERSITY COLLEGE,
SOUTHAMPTON.



AUTHOR'S PREFACE

THIS book is addressed to two classes of readers. It offers to professional students a preliminary survey of the whole field of educational theory and practice; while the wider public, whose enlightened interest is the mainspring of social progress, may, I hope, find in its pages something to stimulate reflection upon those larger issues which must be determined, if at all, by the consensus of their opinion. In outlining such a survey, in collecting materials for such reflection, I am aware that I have attempted what has often been done before. But as knowledge and experience grow, and as the spiritual atmosphere of an age changes, there is always room for another attempt—especially, perhaps, for one that presents the data of education, as they are presented here, from a definite point of view. In short, an author need apologize not for doing the thing again, but only for not doing it better.

Before a reader commits himself to following an argument, he is entitled to know in a general way whither it seeks to lead him. I may say, then, that my purpose is to reassert the claim of Individuality to be regarded as the supreme educational end, and to protect that ideal against both the misprision of its critics and the incautious advocacy of some of its friends. I believe that a sane and courageous pursuit of the principle of individuality in education is above all things necessary, if our civilization is to strengthen its now precarious foothold between the tyranny of the few and the tyranny of the many.

It is my pleasant duty to acknowledge many helpful criticisms I have received from my colleagues, Professor John Adams of the University of London and Professor Bompas

Smith of the University of Manchester, and to thank my friends, Captain F. A. Cavenagh and Mr. J. C. Hague, for helping me to make smoother many rough places in my exposition. I have also to thank the editor of the *Educational Times* for permission to incorporate an article on play published, some years ago, in that journal, and the editor of the *Mathematical Gazette* for allowing me to use some paragraphs from my presidential address to the Mathematical Association.

As an officer of the London County Council, I am required by the regulations to state that the Council is in no degree responsible for any of the opinions that stand under my name.

T. P. NUNN.

LONDON,
January, 1920.

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CHAPTER I

THE AIM OF EDUCATION

"EVERY art," said Aristotle in his famous exordium, "is thought to aim at some good." Now education, as we shall consider it in this book, is certainly an art. It is reasonable, then, to begin by asking at what good it aims.

There is no lack of confident answers to the question. The purpose of education, one says, is to form character; another, to prepare for complete living; a third, to produce a sound mind in a sound body; and the series of replies of this kind could easily be continued. All of them seem satisfactory until, pursuing the matter farther, we ask what kind of character it is desirable to "form," what activities "complete living" includes, or what are the marks of a healthy mind. We then find, as Dr. M. W. Keatinge has trenchantly pointed out, that the success of these attempts to state a universal aim for education is largely illusory, being due chiefly to the happy fact that every one may, within wide limits, interpret them exactly as he pleases. For A.'s idea of a fine character turns out to be either ridiculous or rankly offensive to B.; what C. regards as complete living would be a spiritual death for D.; while the *mens sana in corpore sano* that E. reveres, F. loathes as the soul of a prig housed in the body of a barbarian. In face of such discoveries a cynic might declare that the real use of the maxims we have quoted is to conceal, as behind a verbal fog-screen, differences of educational faith and practice too radical to be harmonized and too serious to be exposed to the public view.

The origin of these unhappy differences is easily disclosed.

Every scheme of education being, at bottom, a practical philosophy, necessarily touches life at every point. Hence any educational aims which are concrete enough to give definite guidance are correlative to ideals of life—and, as ideals of life are eternally at variance, their conflict will be reflected in educational theories. For example, if the “Greek view of life” cannot be reconciled with that of the Puritan reformers, it is idle to look for harmony between the conceptions of education that sprang from them. Moreover, it is not only true that no ideal of life has for long reigned unchallenged over civilized men, even of the same race and nation; we must also recognize that among the nominal followers of an ideal there are always rival sections, doubtful adherents and secret rebels. Is it wonderful, then, that the prophets of education constantly gainsay one another and that the plain man knows not where to turn for truth?

The root of the trouble doubtless lies in the complexity of human nature, and especially in one of its strangest paradoxes. From one standpoint men seem like solitary inhabitants of islands, each sundered from the rest by an impassable sea. Your spirit, for example, and mine can communicate indirectly and clumsily by means of the sounds our lips utter and the written or printed marks our fingers frame; but there is no direct touch between us and no community of being: you are for ever you and I, I. Yet from another standpoint men are seen most truly to be every one members one of another. We come into the world with minds as empty as our bodies are naked; and just as our bodies are clothed by others' hands, so our spirits are furnished with what enters into them from other spirits. Stripped of these borrowings we could hardly live, and should certainly be less than human.

When men philosophize about life they are prone to lay exclusive stress upon one or other of its contradictory aspects. Thus to many thinkers of post-Reformation Europe the individual life seemed not only self-contained but also self-sufficient; men, they held, formed themselves into societies

only because the life according to nature, besides being "solitary," was also "poor, nasty, brutish, short." This exaggerated individualism was followed, when it had run its dramatic course in history, by a reaction which reached its theoretical climax in the pages of Hegel. Here Hobbes' order is completely reversed: society, instead of being the offspring of man's invention, becomes the parent of his spiritual being. Conceived in the hardened form of the State, it is a super-personal entity, a Leviathan in a sense Hobbes never reached, of which the single life is but a fugitive element—an age-long spiritual life from which the individual spirit, with its private will and conscience, draws whatever measure of reality it possesses.

Each of these rival ideas arose, as philosophies generally arise, out of the social and political conditions of the time, and, in turn, reacted strongly both upon those conditions and upon the educational practice that reflected them. For the results in the former case the reader must consult the historians, but the bitter fruit of the Hegelian ideas has ripened and been gathered under his own eyes. It would be absurd as well as unjust to charge upon any philosopher the whole guilt of Armageddon; for philosophers, as we have said, only give definite form and direction to movements which are stirring vaguely and irresistibly in a million minds around them.¹ Nevertheless the connection between the World War and Hegelianism is too close to be ignored. From the idealist of Jena more than from any other source, the Prussian mind derived its fanatical belief in the absolute value of the State, its deadly doctrine that the State can admit no moral authority greater than its own, and the corollary that the educational system, from the primary school to the university, should be used as an instrument to engrain these notions into the soul of a whole people.

¹ And it should be remembered that a noble line of British thinkers—*e.g.*, T. H. Green, the Cairds, F. H. Bradley, B. Bosanquet, Lord Haldane, Sir H. Jones—have drawn inspiration from Hegel.

The most urgent question before the educators of to-day is whether they are to foster this sinister tradition or to help humanity to escape from it to something better. There can, of course, be no return to the doctrine of Hobbes; his leadership would be quite as fatal as Hegel's. The idea that social bonds are imposed upon the individual from without and accepted under the terms of a "social contract" has, in fact, long been exploded. It is now recognized universally that they originate within man's nature and are woven inextricably into the texture of his being. The strongest "self-regarding" impulses cannot fashion a life that would not fall to pieces if the social elements were withdrawn. The most original personality is unintelligible apart from the social medium in which it grows; no Thoreau could hide himself so deeply in the woods as to escape from the social in his own mind. What is needed is not the repudiation of these facts, but a doctrine which, while admitting their full significance, yet reasserts the importance of the individual and safeguards his indefeasible rights.

Such a doctrine we seek to set out in these pages and to make the basis of a stable educational policy. We shall stand throughout on the position that nothing good enters into the human world except in and through the free activities of individual men and women, and that educational practice must be shaped to accord with that truth. This view does not deny or minimize the responsibilities of a man to his fellows; for the individual life can develop only in terms of its own nature, and that is social as truly as it is "self-regarding." Nor does it deny the value of tradition and "discipline" or exclude the influences of religion. But it does deny the reality of any super-personal entity of which the single life, taken by itself, is but an insignificant element. It reaffirms the infinite value of the individual person; it reasserts his ultimate responsibility for his own destiny; and it accepts all the practical corollaries that assertion implies.

Returning to an earlier remark, we may state the position in another way. While every man tends to draw his ideal of life largely from the inspiration of others, yet it may be maintained that, in a perfectly good sense of the words, each must have his own unique ideal. It is the sense in which every work of art—for instance, every poem—has its own ideal. A poet who recognizes that his creative impulse has failed would never point to another poem and say, “That is what I intended to do.” His ideal was concrete, and to be embodied, if at all, in *his* poem and in no other. It marks the perfect achievement from which *his* work has fallen short; not a goal that another has or might have reached. It follows that there can be no universal aim of education if that aim is to include the assertion of any particular ideal of life; for there are as many ideals as there are persons. Educational efforts must, it would seem, be limited to securing for every one the conditions under which individuality is most completely developed—that is, to enabling him to make his original contribution to the variegated whole of human life as full and as truly characteristic as his nature permits; the form of the contribution being left to the individual as something which each must, in living and by living, forge out for himself.

We shall have to inquire shortly whether this view is supported by the facts of human development—that is, whether it is based upon the solid ground of nature or only upon an amiable illusion. That will be our task in the following chapters. Meanwhile it may be useful to indicate some of its consequences and to discount some misconceptions to which it is liable.

Our doctrine, as stated crudely above, may seem to permit no discrimination between good and bad ideals of life—between forms of individuality that ought to be encouraged and forms that ought to be suppressed. Is the schoolmaster, it may be asked, to foster with impartial sympathy the making both of an Emile Pasteur and a Cesare Borgia? We reply that

the ultimate responsibility of a child for himself does not free the others from responsibility towards him; an educator is not to foster a bad life on the ground that it promises to achieve the uniqueness of a good poem. There are things as certainly destructive of the soul as prussic acid is of the body. Life is fenced round with prohibitions which the young explorer must not be allowed to ignore. But within the circle thus marked out there is infinite room for his activity. It takes all sorts to make a world, and the world becomes richer the better each becomes after his own kind. Even where the moral law is positive and not merely permissive, obedience may take forms endless and incalculable: thus a motorist, it has been said, best shows his love for his neighbour by keeping to the left of the road. The point need not be laboured. It is manifest that there is no limit to the number of life-patterns into which good or blameless actions may be woven, and that it is impossible to formulate in advance the concrete principle of excellence of any of them.

We may go farther, and say that the prudent teacher will take care not to multiply his prohibitions beyond necessity. Few things are more difficult than to foresee whether a new type of individuality, a new form of expression in thought or action, will ultimately add to or detract from the real riches of the world. It is fatally easy to condemn as contrary to beauty, truth, or goodness what merely runs counter to our conservative prejudices. We know how often in the past men have sought to suppress the creative activity whose fruits have later been seen to be among mankind's greatest treasures. We need to remind ourselves—teachers, perhaps, more than laymen—that these “old, unhappy, far-off things” are constantly being repeated and paralleled, now in trivial instances, now in matters of serious importance. The younger of this generation have seen the “futurists” break away from the tradition of painting—a portent met here with ridicule, there with anger, with active reprobation all round. Their elders remember that

the same phenomena attended (how incredible it is!) the emergence of Wagner and the "music of the future." And how long is it since the entrance of women into medical studies shook Victorian England to the very foundations of its respectability? *E pur si muove*. The teacher will do well, then, always to have in mind the warning of Gamaliel¹ and to beware lest haply he should be found to fight against God. In particular, he must be careful, in teaching social duties, not to seek to confine his pupils to the purview of an outworn text. Social obligations can be discharged in an infinite number of ways, and none can foresee or set bounds to what the human spirit may do in this as in all other directions. A daring and powerful soul may raise the whole moral quality of the social structure by asserting an individuality that may at first seem hostile to its very existence. And the unheroic soul, too, will best serve society by becoming most fully and truly himself. In short, the claims of society upon its members are best satisfied, not when each is made as like his fellows as possible, but when, in Dr. Bosanquet's language, "he values himself as the inheritor of the gifts and surroundings that are focused in him, and which it is his business to raise to their highest power."

The reader may have noticed that we have so far avoided a very difficult question—namely, whether society (or, to be precise, the State) may not at times of crisis demand from its members services that entail the supersession, even the final sacrifice, of their individual development, and whether an affirmative answer would not greatly weaken the general force of our argument. To this we may reply that mankind is not condemned for ever to endure its present evils; if there is a will to escape from them, its nobler spirits ("Saluons ces génies futurs!") will certainly find a way. But if it is lawful to dream

¹ Also, perhaps, the aspiration of Anatole France: "Espérons dans ces êtres inconcevables qui sortiront un jour de l'homme, comme l'homme est sorti de la brute. Saluons ces génies futurs!"—*Le Jardin d'Epicure*.

of a world in which the good of all would be much more nearly the good of each than it is at present, it is lawful to do whatever may help to make the dream reality. What, then, could education do better than to strengthen men's sense of the worth of individuality—their own and others'—teaching them to esteem the individual life, not, indeed, as a private possession, but as the only means by which real value can enter the world? In this, it may be claimed, is the strongest bulwark of freedom and the firmest guarantee against the rule of violence.

Some who are satisfied that the intentions of our doctrine are good may yet doubt whether they are practicable. Does it not require, if not a separate school, at least a separate curriculum for every pupil? Here again we insist that we do not seek to change the unchangeable conditions of human existence, but merely to make the best use of them. Individuality develops only in a social atmosphere where it can feed on common interests and common activities. All we demand is that it shall have free scope, within the common life, to grow in its own way, and that it shall not be warped from its ideal bent by forces "heavy as frost and deep almost as life." Under such conditions some boys and girls will show themselves to be by nature secluded and cloistral spirits, and it is to the general interest that they should be allowed to be so.¹ But the crowd and the hero have such potent influence that few are likely in their development to wander far from the established types. In short, individuality is by no means the same thing as eccentricity. Teachers are not called upon to manufacture it deliberately, but merely to let it grow unimpeded out of the materials of each child's nature, fashioned by whatever forces, strong or weak, that nature may include.

It is the common boast of Englishmen that throughout their history they have clung stubbornly to the idea of

¹ The poet Shelley is a classic example of a type poignantly illustrated in the author of the recently published "Diary of a Dead Officer." Miss May Sinclair has vividly realized it in one of the characters of her novel, "The Tree of Heaven."

individual liberty and have refused to exchange it for any more specious but delusive good. The worst charge that can be brought against them is that in refusing equal liberty to others they have too often sinned against the light that is in them. Upon what basis does that historic claim to liberty rest if not upon the truth, seen darkly by some, by others clearly envisaged, that freedom for each to conduct life's adventure in his own way and to make the best he can of it is the one universal ideal sanctioned by nature and approved by reason; and that the beckoning gleams of other ideals are but broken lights from this? That freedom is, in truth, the condition, if not the source, of all the higher goods. Apart from it duty has no meaning, self-sacrifice no value, authority no sanction. It offers the one possible foundation for a brotherhood of nations, the only basis upon which men can join together to build the city of God. Hunger for it is the secret source of much of the restless fever of our age. By a paradox, as superb as cruel, millions of men who share our speech, and millions more who share our hopes, have given up their own claims to it, so that in the end it may become the law of the world. For if "to make the world safe for democracy" means not this, it can mean nothing but to exchange one tyranny for another. Dare we take a lower, and can we find a higher, ideal to be our inspiration and guide in education?

NOTES ON BOOKS, ETC.

JOHN ADAMS, "The Evolution of Educational Theory" (Macmillan, 1912), gives the most comprehensive and illuminating review of the subject. M. W. KEATINGE, "Studies in Education" (Black, 1916), contains an acute criticism of educational aims. J. WELTON, "What do we mean by Education?" (Macmillan, 1915), develops the relation between educational theory and ideals of life. Two volumes in the Home University Library (Williams and Norgate) give, with bibliographical references, a clear account of the movements associated in the text with Hobbes and Hegel: G. P. GOOCH, "Political Thought from Bacon to Halifax," and E. BARKER, "Political Thought from Spencer to To-day." The Hegelian position is brilliantly criticized in L. T. HOBHOUSE, "The Metaphysical Theory of the State" (Allen and Unwin, 1918). It receives a more friendly treatment in MUIRHEAD and HETHERINGTON, "Social Purpose" (Allen and Unwin, 1918).

CHAPTER II

LIFE AND INDIVIDUALITY

THE central notion of the last chapter may be compressed into an aphorism: Individuality is the ideal of Life. To call it an ideal implies that it is at once a goal of effort and a standard by which the success of the effort may be judged; also that it is something that may be approached indefinitely yet never reached. What is, then, its precise character?

To answer that question it will be helpful to develop farther the comparison (p. 5) between a man's life and a work of art. For every one will agree, on the one hand, that individuality is in some sense the goal and standard of æsthetic creation, and, on the other hand, that the individuality of a poem, a sonata, a picture, a statue, is a partial expression of the artist's own. It is not difficult, therefore, to see that æsthetic activity shows, in a peculiarly concentrated and energetic form, characters that actually belong to life in *all* its modes of expression.

The more prominent of those characters are easily recognized. In the first place, the artist strives to express through his materials a single scheme, in which the elements, however diverse in nature, have each its place, not accidental or irrelevant, but necessary and meaningful. He succeeds in so far as he can impose upon them this "unity in diversity"; he fails in so far as they break from his control. In the second place, æsthetic creation is autonomous. This does not mean that a poet is independent of grammar and logic, that a musician need not regard the natural properties of chords and progres-

sions, or a painter the form and structure of his model. But it does mean that there is no *external* law determining beforehand the use he may make of these things. Eighteenth-century critics censured the "incorrectness" of Shakespeare, but a wiser generation recognizes that the plays have a logic of their own which can be judged only by its results.¹

To speak of individuality as the ideal of life implies, then, that life as a whole is autonomous and that it constantly strives after unity. Upon the first point we have already said enough in the preceding chapter; we need add only that autonomy, as defined above, is the essence of man's "freedom" as a self-determining agent. The statement that man's will is free is ridiculous if understood as a claim that he can escape from the laws of his own nature; but it is sound sense when understood as extending to the whole of life the obvious truth that it is impossible to invent a machine before it is invented or to compose a sonata before it is composed.

The second point could be illustrated in a thousand ways from every phase of human life. Unity in diversity is, for instance, the clear mark of all purposive actions, from (say) the skilled handling of knife and fork in eating a chop to the world-wide operations of a Napoleon of finance. Again, it is the mark of all knowledge, from the power to "perceive" objects and events, such as tables and chairs and the movements of taxi-cabs,² to the power to understand the behaviour of a planet or a system of metaphysics. This unity, whether shown in action or in understanding, is always a partial expression of the individual's unity, and is felt by him as a pulse of the energy which is the very stuff of his life. And that it

¹ Similarly, an inventor must, of course, take account of the properties of his materials and the laws of physics, but no one can prescribe the use he is to make of them. To do so would be to invent the machine before it is invented. (Cf. Bosanquet, "The Principle of Individuality and Value," p. 331.)

² Whenever, for example, I recognize an object as a chair, a great number of very different former experiences contribute to the present experience and help to give it its character.

extends, potentially, to the whole of life is shown by the fascination of any well told biography in which the writer brings out the unity which his subject's life strove after, and shows where and how it was broken and frustrated. Needless to say, the art of the novel and the drama draws largely from the same source of interest.

We have undertaken (p. 5) to seek a scientific basis for this view of life, and must now proceed to fix the general lines of our inquiry. But before we can do so, a very difficult question must be faced and answered. What we have said about individuality has been applied, so far, only to man's conscious nature or "mind"; but reflection will show that it can be said with equal truth about his body, and, indeed, about the bodies of all animals and even about plants. For, from the first division of the fertilized egg, bodily growth suggests everywhere the unfolding of a unitary plan, or the concerted action of individuals who thoroughly understand one another and have devoted themselves to a common purpose.¹ Thus the history of the bodily organs may be likened to the parts of a piece of polyphonic music wherein each pursues its own melodic course, yet takes account all the time of the other parts and of the musical whole they are conspiring to realize. And in growing to its final form the body seems to show only in a less degree than the mind the same quality of self-determination.² It seems clear, then, that whatever explanation we give of the broad facts of life must apply, in principle, equally to body and to mind. Hence the question: Are we, since our bodies are "matter," to seek in physical laws an explanation for the whole of life; or are we, since our bodies are alive, to interpret their activities by what we know of life where its character appears in the highest

¹ Cf. "Die Pflanze bildet Zellen, nicht die Zelle bildet Pflanzen" (De Bary). "Each part acts as if it *knew* what the other parts are doing" (Nägeli). (Quoted by T. H. Morgan.)

² We have, in fact, borrowed the term "autonomy" from the biologist Hans Driesch, who applies it in this sense to the facts of morphogenesis.

and clearest form—namely, in the conscious life of the mind ?

The urgency of the question lies in the fact that men of science, and particularly physiologists, generally seek to interpret the life of the body entirely in terms of facts and notions derived from physics and chemistry. This tendency (or prejudice) is natural. The ultimate elements of the body are the familiar chemical elements, carbon, hydrogen, nitrogen, and the rest, combined in forms which can often be reproduced in the laboratory; the water of the body is ordinary water¹ and behaves as such; the oxygen we breathe does the usual work of oxygen, breaking down compounds and setting free heat; the net heat-value of food consumed is precisely equal to the heat-value of the mechanical work the body performs, just as it is in the steam-engine or petrol-motor. Immersed in discoveries of this order, and seeing their number daily increased, it is not surprising that physiologists come to think of the body as nothing but an exceedingly complicated physico-chemical machine. Theirs is, in fact, essentially the view of Descartes which made so much stir in the seventeenth century—namely, that man might be regarded as only a very cunningly fashioned automaton if we did not know from inner experience that he has a soul.

Descartes did not shrink—at least in theory—from the deduction that where, as in the case of other animals, direct knowledge of a soul is impossible, we need not suppose the creature to be anything more than a *bête-machine*. Thus (he would have said) the cry uttered by a beaten dog is an event essentially of the same order as the emission of sound by a bell, and no logic compels us to ascribe it to pain. No modern biologists would go so far as that, at least where the higher animals are concerned; but their scruples necessarily bring

¹ It is even maintained that the aqueous solution which forms the basis of the blood-plasma has the composition of the ancient seas wherein life probably began.

them face to face with an awkward dilemma. Either mental facts belong to a distinct province of being whose connection with physiological facts must be for ever inscrutable, or else they, too, are reducible somehow to facts of physics and chemistry.

Most advocates of the "mechanistic conception of life" elect, prudently, if unheroically, the former course;¹ but there are bolder spirits who do not shrink from the latter. Of these Dr. Jacques Loeb is at present the most thorough-going and daring representative. His experiments on artificial fertilization, on the artificially directed growth of animals, and on the "tropistic" factors in instinct, are undoubtedly most impressive. They have given him the hope—perhaps we must not call it a pious hope—that a physico-chemical explanation will be found in time for all the "wishes and hopes, efforts and struggles, . . . disappointments and sufferings" that form "the contents of life from the cradle to the bier."

Meanwhile, psychologists, who do not welcome the annexation of mental facts by physics and chemistry, have been hard put to it to formulate a view which shall at once satisfy the just claims of those sciences and preserve the prerogative position of mind in life. For Descartes sundered body and mind so effectively that he was himself unable, except by a most unconvincing *tour de force*, to bring them together again; and he left the problem practically insoluble for his successors. Most of them have been driven, therefore, to a position which answers almost completely to that of the less intransigent mechanists. In brief, they treat the mind, or, rather, "experience" as if it were a self-contained field of events and causation which has some inscrutable connection with bodily events, but plays no part in determining them. To hold this view—in the form called the "doctrine of psycho-physical

¹ For a statement of this position see D'Arcy Thompson's brilliant article in the volume "Finite Life and Individuality," edited by Wildon Carr (Williams and Norgate, 1919).

parallelism"—has long been, and perhaps still is, orthodoxy in psychology.

But the labours of an increasing company of workers seem to promise an end to this unhappy divorce between the sciences of body and of mind. We may take the work of Professor H. S. Jennings of Pennsylvania University as typical of them. This writer, like most of his school, has directed his studies chiefly to the behaviour of the lower organisms. Here, if anywhere, it should be possible to analyze life into chemical and physical reactions, and Jennings' earlier researches were definitely guided by the mechanistic conception.¹

But after long familiarity with the ways of these lowly creatures he was forced to the conclusion that physics and chemistry are insufficient to explain even the simplest forms of animal life. The animal's life is, of course, permeated (as human physiology is) by chemical and physical factors; but just as a poem, though permeated by grammar, is more than a sum of grammatical expressions, so the behaviour, even of a protozoan, escapes beyond the conception of a physico-chemical machine. In short, the humblest creature is autonomous.

The facts that converted Jennings to this view may be illustrated by some of his observations on the stentor—a single-celled, trumpet-shaped infusorian that dwells in marshy pools, attached to a water-plant or bit of débris, surrounds the lower end of its body by a translucent tube into which it can withdraw at need, and lives by agitating the cilia round the disc that (nearly) closes its trumpet and so whipping up vortices which carry food-particles into its mouth. When a stream of water containing carmine impinges against its disc, the stentor will at first drive the particles in the usual way into its mouth, but very soon begins to twist on its stalk and bend its trumpet away from the intrusive cloud. If several repetitions of this movement do not relieve it from the presence of

¹ This phase of his work is represented by the citations in the first chapter of Professor C. Lloyd Morgan's "Animal Behaviour."

the irritant, another reaction is tried; the ciliary movement is suddenly reversed, so that the particles are now thrown off the disc. If this manœuvre also fails, the animal contracts into its tube, remains there for about half a minute, then again emerges, unfolds its disc, and begins once more to move its cilia in the normal direction. A most interesting question now arises. The original conditions being restored, will the original sequence of reactions be repeated? The answer is definitely, No. As soon as the carmine reaches it, the stentor at once withdraws into its tube for a while, and continues to do so, remaining for a longer period each time, as often as, on re-emerging, it receives the particles upon its disc. Finally, it forces itself free from its attachment by violent contractions, quits its tube, and swims away to resume the business of life elsewhere.

In describing these "reactions" it is difficult to avoid using terms one would employ without risk of censure in speaking of the analogous behaviour of a higher animal, such as a dog or a man. One is almost irresistibly tempted to say that this minute creature, after trying in vain all the minor devices at its disposal for getting rid of an annoying intrusion, adopts in despair the last resort of flight from an intolerable situation. In fact, viewed from without, the behaviour of the infusorian and the behaviour of the mammal would seem to differ only in details, not at all in principle. And this impression has become the more firmly established in the minds of many cautious and highly experienced observers the more they have studied the ways of these lowly creatures. Thus Jennings suggests that if the amoeba—a tiny speck of living slime, without limbs or organs or even a definite form—were large enough to come within men's ordinary ken, they would regard it as "controlled by the same elemental impulses as higher beasts of prey." Moreover, he subscribes to the opinion, expressed by Dr. Raymond Pearl with regard to rather higher animals (the planaria) that "it is almost an

absolute necessity that one should become familiar, or perhaps better, intimate with an organism, so that he knows it in somewhat the same way that he knows a person, before he can get even an approximation of the truth regarding its behaviour."

These biological studies give one a lively sense of a solidarity in nature running through the whole gamut of animal existence. They teach us that all animals, from the amoeba upwards, are centres of energy, in constant dynamical relations with the world, yet confronting it in a characteristic attitude of independence. Each one in its own way "does trade with time and has commerce with circumstance," shaping its course in accordance with its nature and its powers, and developing in its traffic with its world an individuality, rudimentary or complex, whose ways cannot be foreseen unless one knows it "in somewhat the same way that he knows a person." In short, stupendous as the distance is between the lives of the protozoan and the creature who has been made a little lower than the angels, it consists—like the difference between a village church and a cathedral—not in any radical unlikeness of the essential features, but rather in the differing richness, variety and subtlety of the details in which a single scheme has been worked out at different evolutionary levels.

But while we emphasize the fundamental identity of all animal life, we must not fail to appreciate the enormous differences in the degree of "perfection" it achieves at its widely-sundered levels. On the lower levels the animal's intercourse with the world is narrowly limited in range. Even when, as in the sea-anemone, definite "receptors," that is, specially sensitive cells, are developed in the creature's surface, commerce with the environment is mediated at first only by direct contact or chemical action. At a higher level "distance receptors" are added, that is, cells sensitive to such agencies as light and sound. Transactions of a vastly greater range and complexity now become possible, and with them a much higher degree of individuality. Finally we reach in man a

being who can shape his course by reference to the impalpable and invisible objects of the intellect, can look before and after, and must nourish his life with spiritual as well as material realities. How far down the scale of being receptors are, in the proper sense of the term, sense-organs, it is impossible to say. Judging from what we know of the lower strata of our own organism, we may well suppose their activity in such creatures as the stentor to be utterly unconscious. But somewhere in the phylogenetic history the stimulation of receptors must have begun to be the occasion of a "dim sentience" which was to develop in time into man's clear awareness of an ordered world about him. And in whatever guise experience thus emerged, we must believe that it came, not as a superfluity, or as something disconnected with what went before, but as a means of widening and enriching the sphere of vital activities—a means of raising individuality, so to speak, to still higher powers.

Upon this view man is not to be conceived as Descartes conceived him—namely, as an automaton *plus* a soul, or, as Epictetus put it, "a ghost in a corpse." He is, through and through, a single organism, a "body-mind," the latest term of an evolutionary process in which living substance has developed ever higher and more subtle functions. This view is as remote as possible from materialism; for though it invites the physiologist to push as far as he can his physico-chemical analysis, it refuses to regard perception and thought, feeling and will, as superfluous additions to a machine that would be complete without them. It preserves to the psychological all that ethics and religion require. It spiritualizes the body; it does not materialize the soul.

To sum up the discussion: Of the alternative ways of interpreting life (p. 12), the second is emphatically the one to be followed. Starting from the position that there is more than physics and chemistry even in the humblest animal, it comes to view the history of life as a striving towards the individuality

which is expressed most clearly and richly in man's conscious nature, and finds, therefore, in that goal towards which the whole creation moves the true interpretation of its earlier efforts.

From that view two important consequences immediately follow. One is that the criterion of educational effort laid down provisionally in the first chapter is justified by a sound reading of biological facts; for the education that aims at fostering individuality is the only education "according to nature." The other is that to limit the idea of individuality to the things of the mind is to take far too narrow a view of its scope. Individuality is an affair of the whole organism or "body-mind." The process we see shaping itself in the mind of a boy or girl is only the highest aspect of a process that actually involves the whole being, and includes movements that go back to pre-human days and even to the dateless beginnings of life. For a child is in literal truth the heir of the ages; he carries his inheritance, living, in his organism, and his individuality is what he ultimately makes of it.

Of the writers who, with clear awareness of its import, have followed our method in modern times, one of the first and most notable was Samuel Butler, the author of "Erewhon," who upheld it as a criticism of what he regarded, perhaps with imperfect justice, as the mechanistic heresy of Charles Darwin. Butler argued, for instance, that the facts of habit, of physical growth, of physiological functioning, of instinct, of heredity, can be understood only if we regard them as a group of phenomena whose typical character is expressed most clearly in memory—most clearly there, because in memory we are directly conscious that the past is reasserting itself in the present. Following the principle that the less well known should be explained in terms of the better known, Butler boldly maintained that they should all be ascribed to the operation of "unconscious memory." Similarly he

suggested that the emergence in history of such a limb as the crab's claw can be understood only if regarded as due to an unconscious factor entirely homologous with conscious human invention; the pincers which the carpenter uses for the same kind of purpose being, in fact, only a detachable limb, just as the claw is a permanently attached tool.

Butler's whimsical and malicious genius always prompted him so to phrase his arguments as to shake men most rudely out of their dogmatic slumber. Even the reader whose mind has been prepared by the preceding pages may be startled by the thought that the father of all crabs "invented" his pincer-claws and that his descendants continue to grow them because they "remember" that their forefathers have always done so. The phrases "unconscious invention" and "unconscious memory" contain, in fact, a contradiction which makes such statements seem grossly paradoxical. It will be useful, therefore, to substitute for them terms which may be employed to do justice to Butler's facts without awaking divergent associations.

In the first place, then, we need a name for the fundamental property expressed in the incessant adjustments and adventures that make up the tissue of life. We are directly aware of that property in our conscious activities as an element of "drive," "urge," or felt tendency towards an end. Psychologists call it *conation* and give the name *conative process* to any train of conscious activity which is dominated by such a drive and receives from it the characters of unity in diversity and what Dr. Bosanquet has called "coherent adaptiveness and progressiveness." For instance, the reader's endeavour to understand the present sentence is a conative process in which a relatively complex system of mental acts moves towards a more or less clearly envisaged end.

Now, although the behaviour of the stentor described on pp. 15-16 is essentially of the same character as this, we must hesitate to ascribe it to conation, for we have no good reason

to suppose that the creature is *conscious* either of the carmine or of the end to which his movements are directed. And it is here important to observe that even reading, unquestionably a conative process, involves movements and adjustments of the eyes which, being unconscious, cannot be ascribed to conation, though they have the same general character as conative processes. For the reader's eye does not, like his spectacles, function merely as an optical instrument; its behaviour is the purposive behaviour of a living organ which enjoys, within the empire of the organism, a certain measure of responsible autonomy. Moreover, while the reader's mind is pursuing the printed argument, his neuro-muscular mechanisms are keeping his head aloft upon his shoulders, his digestive glands are dealing with his latest meal, his phagocytes are, perhaps, wrestling quietly with an invasion of the bacilli of influenza. None of these purposive processes may be called conative, for they lie below, and even far below, the conscious level; yet a supra-human spectator, who could watch our mental behaviour in the same direct way as we can observe physical events, would see them all as instances of the same class, variant in detail but alike (as we have said) in general plan. In other words, he would see that they all differ from purely mechanical processes by the presence of an internal "drive," and differ from one another only in the material in which the drive works and the character of the ends towards which it is directed.

To this element of drive or urge, whether it occurs in the conscious life of men and the higher animals, or in the unconscious activities of their bodies and the (presumably) unconscious behaviour of lower animals, we propose to give a single name—*horme* (ὁρμη).¹ In accordance with this proposal all the purposive processes of the organism are hormic processes, conative processes being the sub-class whose members have the special mark of being conscious.

¹ This term is not altogether a neologism. It is used in a kindred sense by some recent writers on psychology.

Similarly we shall bring together under a common designation all the varied phenomena referred by Butler to memory, conscious or unconscious. Following the German biologist Richard Semon, we shall speak of such phenomena as *mnemic* and shall give the name *mneme* (μνήμη) to the property of living substance which they exemplify. Memory, then, is conscious mneme just as conation is conscious horne.

In the task of analyzing in outline the development of the human individual the concepts of horne and mneme will be our constant guides. It will be well, therefore, to begin our investigation with a somewhat fuller inquiry into the nature and the forms assumed by these fundamental aspects or factors of vital activities. That inquiry will occupy us in the next three chapters.

NOTES ON BOOKS, ETC.

B. BOSANQUET, "The Principle of Individuality and Value" and "The Value and Destiny of the Individual" (Macmillan, 1912, 1913), contain a masterly treatment of individuality from the neo-Hegelian standpoint. J. LOEB, "The Mechanistic Conception of Life" (Cambridge University Press, 1912). H. S. JENNING'S views are quoted from his "Behaviour of Lower Organisms" (Macmillan, 1906). HANS DRIESCH'S views are conveniently summarized in "The Problem of Individuality" (Macmillan, 1914). SAMUEL BUTLER'S doctrine is set out in his "Life and Habit" and "Unconscious Memory" (Fifield, new ed., 1910), and has been recently reasserted with much power in A. D. DARBISHIRE, "An Introduction to a Biology" (Cassell, 1917). For the general position taken up in Chapter II. see L. T. HOBHOUSE, "Development and Purpose" (Macmillan, 1913) and the writings of Professor S. ALEXANDER, especially his forthcoming Gifford Lectures, "Space, Time and Deity." In several respects it was—as Professor John Adams has kindly pointed out to the author—anticipated in E. BENEKE, "Lehrbuch der Psychologie" (1833). J. A. THOMSON, "Secrets of Animal Life" (Melrose, 1919), contains several charming essays bearing upon the subject of this chapter.

CHAPTER III

THE WILL TO LIVE

HORME, as we have defined the term, is the basis of the activities that differentiate the living animal from dead matter and, therefore, of what we have described as the animal's characteristic attitude of independence towards its world. The sense in which "independence" is used here needs elucidation. No creature is independent of its world in the sense that it could exist apart from it; prevented from assimilating matter from the environment in the form of food, it would soon cease to live. We may go farther, and admit that the intimacy of the relations between a living organism and its environment is, as Dr. J. S. Haldane has pointed out, one of the main differences between it and a mere machine. Matter from the environment is constantly flowing into and out of the organism, being, in Dr. Haldane's vigorous phrase, only for a while "caught up in the whirl" of its bodily structure. And the same is true of an organism's psychical activities, which could neither develop nor be sustained unless it were in constant intercourse with the world about it. For instance, a great part of a man's psychical activity is evidently dependent upon intercourse with his fellows and would perish if he were isolated. Thus it may be said that the texture of man's mind, like that of his body, consists in what is from time to time "caught up in the whirl" of its structure in perception, in thought, in all the acts involved in the common social life. Nevertheless, every animal, so long as it is alive, continues to affirm or assert itself over against the world of which, from

another point of view, it is merely a part. Even the least "assertive" of us must recognize that this attitude belongs to every moment of our conscious lives. In every act we say to our world, openly or implicitly, "I am here and to be reckoned with; I go a way that is, so far as may be, my own way and not merely yours." And our bodies say the same thing after their own manner. Throughout the whole range of life this attitude prevails, from the amœba, in which it is but a bare, unconscious "will to live," to man, who consciously claims a share in the moulding of his own destiny.

Speaking broadly, we may say that the self-affirmation or self-assertion of the organism in the face of its world is shown in activities of two types, conservative and creative. The distinction is a familiar one. On the bodily level it corresponds to the difference between the adult, whose features, figure and constitution have reached a settled and relatively stable form, and the stripling, who, in all these respects, is fluent and progressive. On the psychical level it is the difference between old-fogeyism, with its attachment to old habits, old friends, old books and old stories, and eager youth hurrying hot-footed from one phase of thought or action to the next. But clear as is the distinction between the two aspects of activity, it is by no means absolute. Even in so conservative a character as Mr. Woodhouse (the father of Jane Austen's *Emma*) there is something more than the obstinate perpetuation of an acquired way of life. For the old way has to be pursued in the face of a constantly changing situation, and this adaptation itself implies the creative element. It is still more evident that conservation is an indispensable element in creation. The mathematician can discover a new theorem only if he retains command of the multiplication table; the scientific investigator advances mainly by reshaping or extending the hypotheses of his forerunners; the methods of the modernist in art, music or poetry are the old methods remoulded or combined afresh; and the most daring statesman

rarely does more than give a novel turn to some ancient political idea. In short, conservation and creation are factors in all self-assertion, and what distinguishes one type of activity from another is not the presence or absence of one of them, but their relative prominence. Keeping this qualification in mind, we may briefly examine some examples of the two types.

Recent physiology affords exquisite illustrations of the conservative activities of the organism on the bodily level. Let us take as an instance respiration in man. It has, of course, long been known that the function of breathing is to supply the body, through the blood, with oxygen, part of which is returned to the lungs and there excreted as carbon dioxide. What was not suspected before the delicate researches of Dr. J. S. Haldane of Oxford, Professor Yandell Henderson of Yale and their collaborators was the extraordinary complexity and efficiency of the arrangements by which the quantities of the gases that enter and leave the blood are regulated. It appears that carbon dioxide is not, as used to be supposed, merely a poison to be got rid of; its presence in the blood in a certain degree of concentration proves to be as necessary to life as the presence of oxygen. To maintain this concentration, the rate and depth of the breathing are, from moment to moment, so regulated that the pressure of the carbon dioxide in the air-spaces of the lungs remains at an average of almost exactly 40 mm. of mercury, no matter whether one is at rest or at work, and no matter, within wide limits, in what kind of atmosphere. The reader must not think that by deliberate rapid or slow breathing he can affect that average; the depth of his breathing will automatically be adjusted to frustrate his efforts. So delicate is the adjustment that, if the concentration of carbon dioxide in the air-spaces rises by 0.2 per cent., the rate of ventilation of the lungs is doubled, while, if it be lowered by the same amount, breathing entirely ceases.

The regulation of the supply of oxygen is at least equally striking. Normally the thin, moist lung-cells that separate the air and the blood take up the oxygen and pass it inwards until its pressure within the blood is the same as in the air-spaces. A dead membrane could do as much. But when, as at high altitudes, the body, by reason of the rarefaction of the air, begins to suffer from oxygen-starvation, the cell (in Dr. Haldane's words) "suddenly reminds us that it is alive"; for it begins actively to secrete oxygen inwards so as to pile up the pressure of the gas in the blood. The readjustment in this case takes some time—hence the blue lips and sickness of the mountaineer. It is hardly necessary to point out how relevant this new knowledge is to the problems of flight in aeroplanes at high altitudes, a field in which Dr. Haldane and his collaborators were busied in applying it during the Great War.

Conservation on the psychical level is a subtler thing, but no less real. It is shown partly in the sense of "personal identity" which normally abides with us, partly in an equally abiding sense of familiarity with, of being at home in, one's material and social world; a feeling of competence to confront it even if for the moment it presents a strange or hostile face. These are perhaps aspects or components of a feeling that our hormic processes "belong together," and so may be shared by the higher animals. The loss or serious weakening of one or both of them is a well-recognized symptom of mental disease. The "organic regulation" of breathing and other physiological functions is paralleled by what we may call "psychical regulation." This is shown in the fact—which would be most impressive if it were not so familiar—that lives, to all appearance equally satisfying, can be lived under the most diverse conditions of fortune and of circumstance. It is also shown whenever, our present world being too heavy for us, hope denies its permanence, or fantasy, in dreams and day-dreams, calls a new one into existence to redress the balance. Here is

a perfectly normal function which, when violently exaggerated, appears as delusional insanity.

Turning now to the organism's creative activities, we find them typified on the bodily level by the phenomena of growth. Every animal, beginning as a single cell, gradually builds the matter caught up in the whirl of its life into a characteristic bodily form. The fact that this form is always based upon its ancestors' reminds us that here, as everywhere else, *horme* and *mneme* work together, but should not blind us to the significance of growth as a genuinely creative process. Specially interesting in this connection is the regulation that secures the development of the typical bodily form of an animal in spite of serious disturbances in the normal conditions of growth. We may refer here to the well-known experiments of Driesch on the sea-urchin. By pressing an egg between glass plates, Dr. Driesch compelled the embryo to develop for some time as a flat layer of cells instead of in the normal, roughly spherical, shape; nevertheless it grew, after the removal of the pressure, into a quite irreproachable sea-urchin. The experiments of T. H. Morgan and others on the regeneration of the lost parts of animals illustrate the same kind of regulation in another form.

In the case of man, at least, the creative character of the psychical activities scarcely needs specific illustration; the whole fabric of the civilization he has built up bears witness to it. Social organization, laws and government, the arts and sciences, have all sprung from a restless creative power which, even in the dullest of mankind, adds to the world something that would not be there if that power had not been exercised. The whole meaning of education is missed, unless we think of it as a process in which this creative power is to be given the best possible chances of developing and expressing itself. We need not dwell here upon a thought that will be with us throughout our inquiries. But before we pass on, it may be noted that both the extreme instances of "regula-

tion " mentioned in the preceding paragraph have psychical parallels. The famous case of Helen Keller, blind, deaf and mute, yet a literary woman and a philosopher, is the capital instance to show how independent of circumstance the growth of intellect and character may be; while regeneration is interestingly paralleled by the "re-education" that has restored in many a soldier the mind mutilated or deformed by shell-shock.

We have next to bring out a most important feature which belongs to hormic processes of both kinds and of all levels—namely, their tendency to come together in such a way as to merge their separate identity in some hormic process of wider scope. Just as in an army or a Church there is a hierarchy of officers whose duties and powers are always, except in the highest, subordinate to those of a superior, so in the individual organism we constantly meet with hierarchies of hormic processes. Thus the reader's effort to understand the present sentence is subordinate to the ampler hormic process which aims at grasping the argument of the chapter, this to the still more complex process whose end is the mastery of the book. The hierarchy possibly extends much higher still; for mastery of the theory of education may be an incident in the reader's training for his profession, and the training is in turn subordinate to a prolonged hormic process which will end only with his retirement from teaching.

In this illustration each of the constituents of the hierarchy is, like the hierarchy as a whole, not only a hormic but also a conative process—that is, it is the expression of a conscious "drive" towards a consciously pursued end. It is, however, by no means necessary that the constituents of a conative complex should themselves be conative. Let us suppose that a man, wishing to call on a distant friend, rides to his destination on a bicycle. The expedition as a whole is a conative process, and the act of cycling taken as a whole is also a con-

tive process subordinate to the former. But the latter involves a great multiplicity of movements of limbs, and trunk, which are certainly not now conative processes, though they may have been so before the agent became an expert rider. Most of them are "automatic" processes, originally distinct and autonomous, which, as the cyclist acquired mastery of his art, became organized into a hormic system which works as a whole, and is ready as a whole to serve the interests of any higher system that calls for its collaboration. And in the complicated behaviour of those deeper parts of the organism that subserve digestion and respiration we have instances of hormic systems of an elaborate kind, in the organization and working of which consciousness plays as a rule no discernible part.

We are now in a position to interpret man's life as a history in which two main movements are to be distinguished. One is a development in the character, or, as Professor Alexander is fond of saying, in the perfection, of his hormic processes: a development which carries them from the merely physiological level through the level of unconscious, or only dimly sentient, animality to the level of conscious conation. The other is a complementary development in which they become organized into ever wider and more complex hormic systems. Beginning as a cell in his mother's body, a very part of her flesh, he shortly becomes a "parasite" nourished by her blood and feeding on her food, yet already a being with a life and destiny of his own. The hormic processes, both conservative and creative, in which that life consists, are still mainly unconscious, though, as his nervous system determines and his sense organs form, his "will to live" may be enriched by some vague conational, that is conscious, elements, while he still lies in his mother's womb. As soon as he has left her body and has entered on the long task of picking his way through the labyrinth of the outer world, the conational elements acquire a new significance, and their development becomes the centre

of the spectator's interest. Conation rises slowly from the level of blind or purblind impulse to that of clear-eyed desire, and eventually from the level of desire seeking an immediate good to that of will fixed upon a distant and perhaps ideal goal. Meanwhile, subserving this advance in the character of the hormone, there is a parallel development in its organization—showing itself first in the emergence of his physiological organs and in the correlation of their functions, then, after birth, in the co-ordination of the powers of sense and movement in systems of ever-increasing complexity and effectiveness, and lastly in the gradual building up of great conative hierarchies which determine the form of the man's individuality and are the measure of his life's achievement.

The significance of this twofold development is, we repeat, itself twofold. On the one hand, it enables the growing child to face the world in more definite independence while entering into ever richer relations with it; on the other hand (and the former purpose is doubtless subordinate to this), it enables him to express himself in activities that have an ever-increasing value. Education is concerned with both these aspects of the child's development, but, as we have already said, especially with the latter. That is, for instance, the meaning of the familiar statement that the main task of teaching is to create and cultivate "interests." There should be no need in this day to protect that statement against a once too common misunderstanding. It means not that the school should be made a place of pleasant entertainment, but that it is a place where the child should be tempted to throw himself into the worthiest forms of activity, and where the hormic systems which function in those activities should be firmly established in his nature against the day when he will be called upon to use them and develop them further in the greater world beyond school.

Two more points must here be dealt with briefly to prepare the way for later discussions. The first is that as hormic

processes become organized into systems, the activities that spring from them become not only more complex but also more *expressive*. The italicized term can best be explained by examples. A good picture of a landscape has more expressiveness than the landscape itself, a better picture of it more expressiveness than one less good. Keats's ode to the nightingale is more expressive than the song of the bird, or than the emotions and thoughts it awakened in the poet before his creative labour began. The play of a trained cricketer is more expressive than the undisciplined smiting of the village batsman. In the same sense of the word, a child's interests and other forms of activity become, as they develop naturally, more expressive than the crude movements of mind and body from which they sprang. We return here to an idea we have already had before us: that the way of the artist shows in the clearest and most definite form what is fundamentally and ideally the way of all life. We draw and must constantly reinforce the corollary that the best way of education is the one in which this idea is most fruitfully applied.

Secondly, we must note that recent psychological investigations, conducted by the method called "psycho-analysis," have thrown a flood of light upon the whole question of hormic organization. They have shown, on the one hand, how large a part is played in our conscious behaviour by hormic factors of which we may be at the time utterly unconscious—that is, that our conative processes are rarely purely conative, but almost always embrace important components belonging to the lower strata of our bafflingly complex organism. On the other hand, they have illuminated in a striking way the continuity of our conative development, showing that the adult mind is, so to speak, but the visible surface of a living structure whose deeper layers are hormic elements dating from infancy or even beyond, and liable in certain circumstances still to break free from the systems into which they have become

merged and to claim unfettered expression. But these are matters that had best be dealt with in the inquiry into the forms of mneme to which we now turn.

NOTES ON BOOKS, ETC.

J. S. HALDANE, "Organism and Environment as illustrated by the Physiology of Breathing" (Oxford University Press, 1917). Also "The New Physiology" (Griffin, 1919). On the question of conation, the advanced student may study with profit S. ALEXANDER, "Foundations and Sketch-Plan of a Conational Psychology" (*British Journal of Psychology*, vol. iv., pts. 3 and 4, December, 1911, Cambridge University Press). E. B. HOLT, "The Freudian Wish" (Fisher Unwin, 1915), gives a lively and ultra-radical treatment of the same subject. The standard book of interest is JOHN ADAMS' "The Herbartian Psychology Applied to Education" (Heath and Co.); the subject is also pleasantly treated in J. WELTON, "The Psychology of Education" (Macmillan, 1911).

CHAPTER IV

THE LIVING PAST

IN the conscious life of man mneme is most clearly manifested in memory. In memory my own past still lives in me; and not only my own, but also the past of men who died ages before my birth. And through the social memory we call history the past is incessantly shaping the present actions of men. There are, however, in our conscious life many instances of mnemic activity where the term "memory" cannot be applied without an inconveniently wide extension of its proper meaning. It would, for example, be a little violent to say that the reader "remembers" what words the several groups of letters in this sentence represent, or that he "remembers" what they mean. And he would certainly not tell an intimate friend, encountered in the street, that he "remembers" his face. Nor would he say that the expert pianist "remembers" where to place his fingers as he plays a piece of music at sight. In all these cases memory once played its part, but that has long been superseded as the basis of action. The agent now reacts immediately upon the stimulus without any conscious reference to past experience; he "reads" the print, he "recognizes" or simply "sees" his friend, he plays the runs and chords "automatically." When we extend our consideration to lower animals, the need of a wider notion than memory proper becomes still more evident. Horses and dogs, for example, learn a great deal both from instruction and from experience, but it is unlikely that conscious memory plays more than a very subordinate part in their education. And when we descend to the

level of such creatures as the stentor the invocation of memory is quite out of the question. Yet, as we saw on pp. 15-16, the stentor, in its encounter with the stream of carmine, certainly behaved as if it remembered at one stage of the contest what had happened at previous stages. It is abundantly clear, then, that we need, merely to describe the overt behaviour of man and other animals, a term, such as *mneme*, which shall bear to memory in the proper sense the same relation as *horme* bears to conation—that is, a term referring to a general property of living organisms, of which conscious memory is only a special and occasional manifestation.

In inquiring more closely how *mneme* operates, we may conveniently begin with an example drawn from the interesting pages of the biologist from whom the word has been borrowed. A young dog, happily ignorant as yet of human baseness, greets with friendly barking a gang of boys, who respond by pelting him with stones. Hurt and terrified, the puppy runs home, and for months or even years afterwards bolts with tail between legs at the sight of man or boy bending suddenly to the ground.

To understand such a sequence of events it is clear that we must in the first place credit the dog with certain tendencies and capacities: the capacity to “perceive” and the tendency to be “interested in” the doings of a group of noisy young human beings, the tendency to bark half joyously and half defiantly at their clatter, the capacity to single out or discriminate from the mass of their movements such acts as stooping and throwing, the capacity to feel pain and terror when the skin is violently struck, the tendency to flee when these feelings are powerfully evoked. These capacities and tendencies, together with a multitude of others, are the conditions which determine the way in which the puppy will react to the various situations he encounters. Using a convenient term of the psychologists, we may call their sum-total the animal’s “disposition”; and, since the point of the story we are analyzing

is that dispositions change as the result of "experience," we may distinguish the initial sum-total from the form it subsequently assumes, by naming it, in reference to what is to follow, the dog's "primary disposition."¹ There is no evidence that the dog, when once safely home, ever remembers or thinks about his misadventure, yet we find that if, long afterwards, a stranger should, in his presence, suddenly stoop to pick up an object from the ground, or to adjust a shoe-lace, the animal may bolt incontinently from the spot, just as if he had not only perceived the movement, but had also received a blow from a missile. It is evident, therefore, that his "primary disposition" has suffered a change to a "secondary disposition," which only awaited the appropriate occasion to be revealed in a novel form of reaction. The question is how we are to conceive of the change. The obvious reply is that the dog's experience has left traces, or as Semon terms them, "engrams" ("imprints") upon the primary disposition, and that the change is due to these. But if we are to understand the matter thoroughly the reply must go farther than this. We must suppose not only that, on the day of trouble, the perception of stone-throwing, the feeling of a blow, and the experience of flight urged by pain and terror were for the first time brought together in the dog's history, but that he somehow *experienced* these things as *belonging together*. Of his capacity to experience such things as "belonging together" we can say only that it is a special case of the organism's general power to create unity in diversity. We must, however, further suppose that, as the correlative of that capacity, the several engrams which correspond to the several items of the original "excitement-complex"—i.e., the perception of stooping, the pain, the feelings of the terrified flight and the rest—do not simply lie side by side in the animal's

¹ Semon's term is "primärer Indifferenzzustand," the word "indifference" referring, of course, to the fact that the animal has as yet not learnt to react to movements suggestive of stone-throwing in the way he does after his experience of their painful consequences.

disposition, but are deposited therein as an organized "engram-complex," forming henceforward part of the structure of his secondary disposition and having a definite though subordinate unity of its own. And it is the result of this organization that, when one of the original excitements recurs—namely, the perception of a boy or a man stooping to the ground—the engram-complex as a whole is reawakened into activity, and the animal behaves as if the whole of the original situation were reconstituted.

It seems possible to interpret in terms of engram-complexes phenomena of "learning by experience" and of "coherent progressiveness and adaptiveness" that occur in a myriad forms in the behaviour of animals from the lowest up to man. It is important to realize how varied, as well as numerous, those forms may be. In the first place, it is by no means necessary that the stimuli which give rise to an engram-complex should be simultaneous; they are at least as often successive. The power to recite a poem or to play from memory a piece of music implies an engram-complex of the latter kind, so organized that each word or chord, when uttered or played, brings about the repetition of the next and of the subsequent words or chords. The same thing must be true of habitual actions, such as dressing and undressing, unlocking familiar doors, and the like, and of the acquired ways and tricks of domestic and wild animals; in none of which does conscious memory play a conspicuous part, even if it is present at all.

In the second place, the components of an engram-complex may be derived from widely different strata of the organism's nature. An experiment by the physiologist Pavlov illustrates effectively this important principle. Pavlov made a strict point of giving a dog food exactly two minutes after ringing a bell. When the dog was habituated to this procedure, he occasionally rang the bell without offering food or allowing it to be seen. Nevertheless, saliva was on these

occasions copiously secreted in the animal's mouth precisely two minutes after the accustomed signal. The physiologist cannot tell us in detail what happens during such a period of two minutes; but it is clearly to be regarded as the unfolding of an engram-complex which, though it includes in its scheme widely diverse functions, conscious and unconscious, is yet capable of being "released" by the action of a single stimulus—the sound of the bell.

The student will find no difficulty in applying similar explanations to numerous phenomena of daily occurrence—such as the physiological rhythms connected with the digestive functions, and with sleep. It is more interesting still to see how they may be invoked to illuminate the mysteries of growth and inheritance. To understand these—so far as understanding is at present possible—we must, in the first place, grasp the fact that the fertilized germ-cell is not something that precedes the organism, but is the organism itself in its earliest stage. We are then ready to think of it as possessing a disposition—the "primary" disposition of the organism in a special sense—which is already charged with engrams derived from the life of its ancestors. From this point of view the physical growth of a creature from germ-cell to the adult form is seen as a process entirely homologous with the recitation of a poem or the playing of a musical composition from memory. Apart from the circumstance (in a sense accidental) that reciting and playing are conscious while growth is unconscious, the only substantial difference between the two kinds of process lies in the fact that the mnemonic basis of the former was acquired during the life of the individual, while bodily growth reveals an engram-complex that was established far back in the individual's ancestry. We must suppose that the stimulus which provokes the first division of the ovum into two cells acts on the inherited complex in much the same way as the opening words of the poem or notes of the music act upon the acquired complex. Thus

each engram in the series announces in due course its presence in the disposition until at length the whole of the ancient scheme of development is once more reasserted.

We may see the same mnemonic principle at work in the instincts of animals—and here conscious as well as unconscious acts are involved in the reaffirmation of the inherited rhythm. As an illustration we take one of Semon's examples: the nest-building instinct in birds. Nest-building is, of course, the expression of an "urge" subsidiary to the hormic process whose end is the procreation and nurture of the next generation. That great hormic process is initiated, in all animals above the lowest, by definite changes in the structure and functioning of the reproductive organs—changes that are themselves incidents in the repetition of the mnemonic rhythm of life. At a certain stage in its development, the sight of the proper kind of materials acts as a stimulus, releasing a marvellously complex train of activities that ends only with the completion of a nest, often of a highly elaborate and characteristic pattern. The mated birds behave, in fact, as though they remembered and sought deliberately to reproduce a structural plan firmly established in the tradition of their race. Yet neither of them may ever have seen that plan exemplified.

Man shows no such unmistakable instances of racial mneme exhibited on the conscious as well as on the merely bodily level; nevertheless, unprejudiced observation finds sufficiently clear traces of it running everywhere through the tissue of his life. It is a trite remark that "as soon as a wife becomes a mother her whole thought and feeling, her whole being, is altered," and no one shrinks from referring her behaviour, even in its highest spiritual manifestations, to "maternal instinct," that is to racial mneme, as its basis. Many writers have ascribed a mnemonic origin to certain characteristics of mythology and folklore that are found among men of all

racés, and appear in varied but allied forms at all periods of history. It is even suggested with some plausibility that certain common features of our dreams may be, so to speak, revivals of the waking thoughts of our remote forefathers; that they are racial reminiscences which, excluded from waking consciousness by the conditions of modern life, assert their continued existence by weaving themselves into the visions of the night.

It is more germane to our purpose to note that the same notion of racial mneme is the basis of a theory which, though it is sometimes pressed to extravagant lengths, has considerable validity as an educational principle. That is the theory that the mental development of the individual "recapitulates" the mental history of the race. Professor Stanley Hall, a leading exponent of the view, exemplifies it when he bids us see in our little civilized barbarians between the ages of eight and twelve, with their stable bodily form and obstinate good health, and their curious passion for independent life, a clear reaffirmation of a pigmoid stage in human evolution, which still has representatives in the Bushmen and the little people of the Congo forests. In the same spirit Professor Carveth Read, an eminently cautious thinker, finds "recapitulation," not only in the way in which the speech of children, like that of the infra-human hunting pack from which he assumes mankind to be derived, "emerges from emotional noises and impulsive babbling, assisted by gesture," and in their early awakened appetite for private property, but also in the passion which from about the sixth year is directed towards the building of "houses," showing a strong family likeness to the tree-shelters of anthropoid apes, and towards the making of primitive tools. He even suggests that by observation of children we may effect a tentative reconstruction of the lost series of events which made up the early history of man's emergence from the beast, and of his long struggle towards the possession of

language, customs, myths, reasoning power and humane sentiments.¹

Before closing this chapter it is proper to make a brief reference to views, supported by the authority of eminent names, which make a radical distinction among the mnemonic phenomena that we have tried to reduce to a single principle. M. Henri Bergson has maintained that there is a fundamental difference between what he regards as true memory and the so-called "mechanical association" with which we have confounded it. Professor Wildon Carr has illustrated Bergson's distinction by the difference between an auditor's memory of the performance of a piece of music and the "motor mechanisms" that enabled the pianist to play it. Dr. William McDougall has contrasted, for the same purpose, the ease and perfection with which his child of six recalled past scenes and events and the slowness and difficulty with which the same child learned to name the letters of the alphabet. Bergson and McDougall do not explain these differences in the same way, but their interpretations agree in spirit. According to both, mechanical association is an affair of the body, chiefly of the nervous system, while true memory is an activity of a spiritual force or entity that *uses* the bodily mechanism for its purposes. In short, mechanical association belongs to the "corpse," true memory to the "ghost in the corpse."

To combat this contention in detail would delay us too long. We must be content to point out that Bergson and McDougall seem to have surrendered to the mechanists so far as the body is concerned, and seek to redress the situation by invoking the mysterious aid of a *deus in machina*. Unless they are also prepared, which they are not, to accept the Cartesian paradox that all animals but man are soulless, they must either refer the phenomena of "true memory" (including, in McDougall's case, the very numerous phenomena called

¹ See his article in the *British Journal of Psychology*, vol. viii., pt. 4, June, 1917.

“recognition of meaning”) to the operation of a spiritual world-entity which uses all animal bodies as its instruments of expression, or suppose each *machina* in which they appear to have its own *deus*. It is roughly just, if summary, to say that Professor Bergson adopts the former alternative, Dr. McDougall the second. We can only reassert our preference for the view which regards no bodily phenomena as purely mechanical, and sees in the phenomena of conscious life but the highest manifestation of properties that permeate all organisms through and through.

NOTES ON BOOKS, ETC.

The references to SEMON are drawn from his book, “Die Mneme als erhaltendes Prinzip” (Leipzig, Engelmann, 3rd ed., 1911; pp. 420). The book is well analyzed and criticized by Marcus M. HARTOG, “Problems of Life and Reproduction” (John Murray, 1913). For the theory of recapitulation see Stanley HALL, “Adolescence” (2 vols., Appleton, 1904). BERGSON’s views on memory are set out in his “Matter and Memory,” especially Chapter III., and are admirably expounded in WILDON CARR, “The Philosophy of Change” (Macmillan, 1914). McDOUGALL’s views are given in his deeply interesting “Body and Mind” (Methuen, 1911). For the laws of mechanical association, see H. J. WATT’s useful little book, “The Economy and Training of Memory” (Edward Arnold, 1909).

CHAPTER V

THE RELATIONS BETWEEN HORME AND MNEME

WE have separated horme and mneme for convenience of discussion, but it must always be remembered that the terms are only names for aspects of the organism's activities, and that the features to which they refer are, in historical fact, never separated. Every act of self-assertion is both hormic and mnemonic; hormic in so far as it is an instance of the conservative or creative activity which is the essence of life, mnemonic in so far as its form is at least partly shaped by the organism's individual or racial history. In other words, engram-complexes are not to be thought of as dead deposits in the organism, or as possible materials of which the organism's creative activity makes use, but are living parts of the disposition from which all the animal's activity flows; or, to put the same idea differently, are the vehicles in which the conservative and creative functions appear and are exercised.

This very important truth is involved in the familiar observation that progress in art and invention, in science and philosophy, in politics and social life, and (we may add) in morals and religion, is never an advance from something wholly discarded to something wholly new. The stepping stones on which men and societies rise to higher things are never their *dead* selves, but their mnemonic selves, alive and actively growing. The reader is advised, especially if he is a teacher, to gain as vivid an idea as possible of this activity of the "living past" by studying it in the history of some important department of human progress.

He should also learn to recognize the omnipresence of the same principle in every-day activities. Take as an example the writing of a letter. It is obvious that the impulse to use this highly artificial mode of communication is mnemonic, as well as the command of words and their meanings, of spelling, and of pen-movements that is needed for its fulfilment. Moreover, the specific situation out of which the impulse—the hormone—arises must also be largely mnemonic in character, for the writer's purpose must be to congratulate, to apologize, to persuade, to express love or anger, or to perform some other act of a recognized type. This mnemonic mass is the matrix in which hormone stirs and out of which it emerges, taking definite shape and content as it proceeds. Thus the writer's confidence that he "knows what he is going to say" does not imply that he knows beforehand what words he is about to set down. It is an excitement awakened by a situation which, though partly new, is also partly old—an excitement felt already to be spreading to the engrams (engrams of ideas, words, turns of expression, and so forth), whose activities must be drawn into its sphere if it is to be an adequate vehicle of self-assertion in face of the novel as well as the familiar elements of that situation. The same general account may evidently be given of the genesis of a poem, of a piece of music, or of the solution of any theoretical or practical problem. Nor does it hold good only of elaborate activities such as these; it is equally true (for example) of every act of verbal expression that goes beyond the bare repetition of a conventional formula. Thus any conversation that is more than a mere exchange of commonplaces has necessarily an element of adventure; for no speaker who has once embarked upon a sentence can foresee precisely where it will carry him. All that can be said with certainty is: (i.) that the utterance must originate in the excitement, at once hormic and mnemonic, of some specific complex; (ii.) that this complex governs its course from beginning to

end;¹ and (iii.) that the complex does not remain unchanged during the utterance, but is modified and enriched by the products of its own creative activity in such a way that it often becomes a substantially new thing, fitted to be the starting-point of a fresh movement of self-assertion.

This directive influence of the engram-complex is called by psychologists its "determining tendency," and has been studied experimentally in simple cases. Let the reader utter or exhibit to another person (the "subject") a word chosen at random, having previously instructed the subject to reply with the first word that comes into his mind. In this case—technically known as the case of "free association"—it is impossible to foresee what kind of "reaction" the "stimulus-word" will provoke, for the mental movement is at liberty to take any one of an indefinite number of possible directions. But now let the experimenter announce that the stimulus-word will be the name of a class, and that the reaction is to be the name of some specimen of that class; then the result will be quite different. For the association that supplies the reaction is no longer "free"; it is "constrained"—that is, guided by a definite "determining tendency." If, for instance, the stimulus-word is "animal," the reaction will be some such word as "dog"; if "coin," some such word as "penny," and so on.

It is important to realize what happens here. The subject's memory does not throw up a number of suggestions from which a suitable reaction-word is consciously selected; it gives him immediately a word of the required character. Such a result cannot be explained, except on the assumption that the determining tendency is the hormic action of a complex whose excitement induces the activity only of engrams congruent with itself. We may, in fact, regard these experi-

¹ The plight of the nervous public speaker who "loses the thread of his sentence" is due, of course, to a failure of the engram-complex to retain its command of the activity.

ments on constrained association as simplified models of what takes place in all originating activity, whether it be shown in thought, in invention and imagination, or in every-day phenomena of action and will.

Before passing on we must emphasize another aspect of the relations between horme and mneme. We all know that memory is apt to prove treacherous, not only in what it lets slide, but also in what it retains. For instance, an exciting incident we may have witnessed is often strangely translated in our subsequent account of it. This is notably the case if we ourselves played in the events a part not so satisfactory as we might have wished; we are then apt, however innocently and unconsciously, to mould them nearer to the heart's desire. Children exhibit this familiar tendency in a specially striking way, and are liable, as R. L. Stevenson has pointed out, to suffer unjust censure on account of it.

Phenomena of this kind not only show that memory and imagination have a common origin and are always closely allied; they also exemplify well a more general principle—namely, that the mnemonic basis of our actions tends constantly to be modified in such a way as to make self-assertion more effective and (so to speak) more shapely—in a word, more expressive.¹ Thus in the process of attaining to automatism in such actions as writing, playing a musical instrument, dancing, and the use of tools, a number of superfluous and clumsy movements are always eliminated, so that the activity which issues from the final engram-complexes is much more economical, graceful and efficient than it was at first, and may acquire these qualities in the highest degree.

A well-known experiment by Thorndike illustrates the same principle at work on a lower level. Hungry cats were shut up in cages from which they could escape only if, by happy accident, they pulled the cord, lifted the latch or turned the button that opened the door. If a cat once succeeded, by a

¹ See p. 31.

lucky sequence of random movements, in escaping and reaching the food exposed outside the cage, it generally released itself much more quickly on subsequent occasions, and might, in favourable cases, soon learn to do so immediately. We must suppose that in such cases the animal's success tended to consolidate the mnemonic basis of its movements into a definite complex from which the engrams connected with irrelevant actions were excluded. That is to say, successful self-assertion, in animals as in men, tends to modify its mnemonic basis in a direction favourable to still more secure and facile expression.

An interesting feature in the processes just described is the way in which an engram-complex often becomes "consolidated" during intervals of rest from the performance it underlies. As William James says, "we learn to swim in winter and to skate in summer." The reader has, perhaps, himself observed instances in which skilled acts, not yet perfectly automatic, are performed better immediately after than they were before an interval of abstention from practice.¹

Some recent experiments by Dr. P. B. Ballard illustrate beautifully the same phenomenon in verbal memory. Ballard found that when a piece of poetry is learnt by heart, the amount available for recall, instead of being greatest immediately after the learning, may increase for several days—some words and phrases originally remembered being lost but replaced by a greater number that emerge after the interval. This "reminiscence" is very notable in young children, but diminishes in amount as they grow older. In adults it appears to be almost negligible.²

The facts of consolidation form a natural transition to the next point of our discussion. They suggest that a determining

¹ Such observations have an obvious bearing on teaching methods.

² See Ballard, "Reminiscence and Obliviscence," Monograph Supplement of the *Brit. Journ. of Psych.*, No. 2, 1915. The present author formerly possessed in a considerable degree the power of recovering after an interval a melody once heard but not then remembered. He finds that he has now lost it almost entirely.

tendency, after it has ceased to occupy consciousness, may still pursue its work in the darkness of unconsciousness. This interpretation is strongly supported by the common observation that if we "sleep over" a difficult problem, we often find the solution in our hands when we return to it in the morning. And every one must have noticed how frequently things that memory has sought in vain to recall may at a later moment "saunter into the mind," as James says, casually and irrelevantly, "just as if they had never been sent for."

Occurrences of this kind prompt the question whether association is ever really "free," and whether the "accidental" emergence of thoughts and words into consciousness is not always due to the action of determining tendencies—that is, of engram-complexes—"working in the darkness." That, in a great number of instances, this is the case has been proved by the insight and patient labours of Professor S. Freud of Vienna and Dr. Carl Jung of Zürich, whose discoveries have opened up a most important field—perhaps the most important—in modern psychology.

The reader must understand clearly what is the point at issue. It has long been a psychological commonplace that the course taken by thought and memory is normally¹ determined by certain "laws of association." The question raised by Freud and Jung concerns the nature of those laws. According to the older view, association is a purely mnemonic phenomenon, depending entirely upon such "mechanical" factors as the frequency and recency of the connections in experience between the things associated. According to the newer view (which will be seen to be consonant with the ideas developed in this book), it is essentially hormic as well as mnemonic. That is to say, the course of thought and memory is largely determined by *active* complexes, whose

¹ "Normally," because it has commonly been assumed, explicitly or implicitly, that in insanity and in the "irrational" behaviour of neurotics the ordinary laws of association in some mysterious way break down.

influence depends not so much upon whether they have been frequently or recently excited as upon the part they have played in the subject's hormic history. If a complex has been an important vehicle of self-assertion—and especially if its activity has been markedly pleasurable or unpleasant—it will insinuate its influence into the current of thoughts and memories as mysteriously and irresistibly as King Charles's head forced itself into Mr. Dick's memorial.¹

By examining a subject's reactions to a carefully chosen series of stimulus-words, a skilled experimenter can generally bring to light those engram-complexes in the subject's disposition which have or have had most significance for his self-assertion. Sometimes the complexes disclosed by this "psycho-analysis" occasion the subject no surprise; sometimes, on the other hand, he has not the least idea of the degree to which they dominate his mental life—or even, of their existence. For example, when one of Jung's patients reacted both frequently and (often) irrelevantly with the word "short," he was merely revealing unintentionally the annoyance he had consciously suffered for years on the score of his diminutive stature. But when a friend of the author found that his free associations, if followed up, nearly always led to topics connected with his professional occupation, he was astonished and somewhat concerned; for he was a recent and devoted husband. The results of his psycho-analysis do not, however, prove that he nourished, unknown to himself, a coldness towards his wife; they simply illustrate the dominating influence of complexes which had for years been the main channels of his self-assertion. A striking literary instance of the self-revelation sometimes brought about by reaction to "stimulus-words" is Emma Woodhouse's sudden discovery of her attitude towards Mr. Knightley, provoked by a critical conversation with her friend Harriet Smith. The candid reader

¹ This is not merely an analogue; it is rather an example of the action of a peculiarly insistent complex.

will probably confess to similar events, trivial or serious, in his own experience. "Sudden conversions" and a host of analogous incidents are phenomena of essentially the same kind.

More important still than the positive influence of buried complexes is their negative influence in excluding ideas and recollections from consciousness. If a subject is flustered by a stimulus-word, or takes an unusually long time in reacting to it, it is generally safe to deduce that the word has impinged upon a complex whose conscious activity would be painful. The complex may lie on the "fore-conscious" level—that is, the ideas belonging to its activity, though forgotten, may be capable of being recalled by the subject. But in other cases it may be buried so deep that only ruthless and long-continued psycho-analysis can bring it to light. In such cases it is always found to be derived from painful experiences or unpleasant impressions deliberately expelled from the mind, or to be connected with directions of self-assertion from which the subject, in his development, has more or less violently broken away.

The phenomenon here in view is described by the technical term "repression." Ordinary forgetfulness is, without doubt, often due to repression—that is, to the fact that, unconsciously, one *wants* to forget.¹ The letter which I persistently forget to write, or, after I have written it, to post, is frequently a disagreeable one; the family to whom I have inexplicably omitted to send my usual Christmas greetings turns out to have a name similar to that of an intimate friend, recently lost; and so on. Chronic as well as occasional lapses of memory come under this explanation. It has been suggested,² for example, that inability to remember personal names may often be due to the circumstance that one's own name, being

¹ Dr. Ernest Jones boldly maintains that all forgetfulness is due to this cause. See his paper in *Brit. Journ. of Psych.*, vol. viii., pt. i.

² By Dr. Ernest Jones, who, following his master, Freud, has written on the whole subject very brilliantly.

either odd or extremely common, is offensive to one's self-esteem. And a host of blunders and mistakes—such as slips of tongue and pen, misprints, the mislaying of objects, false recognition of persons and things—may similarly be attributed to the influence of repressed complexes.

In the foregoing instances the buried complex exercises direct influence, positive or negative, upon thought or action. In other cases its influence may be disguised by the fact that it merges its activities in those of other complexes which have retained the right of admission to consciousness. The expression of the buried complex is in these cases not direct but *symbolic*. Oddities of manner, spasmodic grimaces, and queer habits (such as Dr. Johnson's trick of touching every lamp-post), often have their explanation here; meaningless in themselves, they can be shown by psycho-analysis to be perfectly intelligible as symbols by which some inarticulate complex is striving to express itself. Thus an epidemic of breakages in the kitchen may symbolize the maid-servant's antipathy to a scolding mistress. The virtuous maid may be unaware of the depth of her resentment, and may seek, quite honestly, to "rationalize" the "accidents" by attributing them in good faith to the coldness of her hands or the hotness of the water, or by invoking some other plausible excuse.

There are few of us whose daily thoughts and conduct do not offer to the psycho-analyst material of this character. And, as Freud has shown, there is one region of the mental life of every one where the symbolic activity of buried complexes is not an exceptional incident but an essential and universal feature—namely, the region occupied by dreams. Dreams, to use Mr. Maurice Nicoll's apt image, are *cartoons*; and in them the skilled interpreter may often "read strange matters." That is why they are now so industriously studied by those whose business is to minister to minds diseased.

There is an interesting and important difference in the attitude of Freud and Jung towards dreams. According to

Freud, a dream always harks back to repressed, and therefore unfulfilled desires of childhood. He holds, then, that its "manifest content" must invariably be interpreted as the disguise assumed by a "latent" infantile wish seeking symbolic satisfaction in the dream-phantasy. Jung accepts the distinction between the "manifest" and the "latent" content of dreams, and recognizes the influence of forgotten incidents of childhood. But for him the dream, though necessarily rooted in the past, is essentially a forward-directed activity. It embodies symbolically a protest or warning of the organism as a whole against the unhealthily restricted range or the dangerous course of its own conscious activities.¹ Both theories have, probably, their special spheres of usefulness, but the reader will observe that Jung's view brings the dream into line with the general doctrine of self-maintenance sketched in Chap. III. and with what was said about the functions of engram-complexes earlier in the present chapter.

A case recently described by Dr. W. H. R. Rivers² illustrates very clearly the value of dreams in the diagnosis and treatment of mental troubles. The subject was an officer in the R.A.M.C. who was a victim to claustrophobia—that is, to an unreasoning dread of being in an enclosed space, especially if he could not escape from it. He had suffered from this painful fear since boyhood, but never discovered it to be abnormal until, on joining the Army in France, he observed that other men could live comfortably in the trenches and dug-outs in circumstances so intolerable to himself that his health completely broke down under them. When he came into Dr. Rivers' hands he was instructed to record his dreams and, in particular, to follow up the memories that came into his mind while thinking over them immediately on waking.

¹ This view is expounded at length in Mr. Nicoll's book and is excellently illustrated, with special reference to education, in Dr. Constance Long's article in the *Journ. of Exper. Pedagogy* for June, 1917.

² In *The Lancet* for August 18, 1917.

In this way he eventually recovered the long-forgotten incident that was the origin of his trouble. It seems that when three or four years of age he had taken an article for sale to a rag and bone merchant, whose dwelling was reached by a long and dark passage, and that on returning with the halfpenny earned by his enterprise he found the door of the passage shut. He was too small to open it, and in the darkness a dog began to growl, causing him the extreme of terror.

The subsequent verification of some of the forgotten circumstances recalled in this dream placed it beyond doubt the engram-complex was here revealed whose subterranean activity had played so baleful a part in the patient's life. We need add to the story only one more item, but one of extreme importance. As soon as the origin of the patient's irrational terrors was disclosed they ceased to plague him. He was able for the first time to sit in a theatre and to travel in a tube railway train with comfort. Thus was illustrated one of the tenets of the Freudian doctrine—namely, that a repressed complex, when once the resistances which kept it submerged are broken down, generally loses its noxious power.¹

There can be no doubt that the evidence summarized in this chapter both confirms and enriches the general view of the organism which we adopted at the outset. In particular it tends to correct common errors and prejudices with respect to the significance of consciousness in human behaviour.

¹ Dr. Rivers at first hesitated to subscribe to this view, thinking it possible that the alleged "cathartic" effect of psycho-analysis may really be due to suggestion: for the patient has been made to believe that when the complex is discovered he will be cured. He appears to have become later more friendly to the orthodox view. It is more important to record Rivers's conviction that his experiences with shell-shocked soldiers definitely refute the Freudian dogma that all repressed complexes originate in infantile sexuality. The origin of Freud's belief is, he holds, to be found in the fact that the wide range of impulses covered by the term "sexual" in the Freudian school are those which are most commonly suppressed in the conditions of peaceful civilized life. In war the soldier is called upon to suppress impulses belonging to an equally primitive and powerful set of tendencies—namely, those connected with fear. It is interesting to note that the patient whose case is described in the text was treated unsuccessfully by Freud before the war.

Consciousness is, as we have said, the form in which self-assertion, whether conservative or creative, reaches the highest level of perfection as yet exhibited in animate creatures. As such it has a significance and a value which it would be perverse to depreciate. Nevertheless, it is, from the biological standpoint, only one of the organism's means of conducting that intercourse with the environment by which and in which it lives. Consciousness marks the growing-point of our higher activities, the edge by which they "cut into reality." Behind this point, this edge, there is a vast hormic organization of which a great part is never represented directly in consciousness, while, of the residue, much that has once been conscious can never normally and in its own character reach the conscious level again. Nevertheless, the movements of consciousness, subserving the organism's perpetual self-assertion, are never wholly explicable apart from this organization, whose history and constitution they express in an infinite variety of subtle ways.

We have already referred (at the end of Chap. III.) to the influence of early-formed complexes upon the ultimate fashion of a man's individuality. So far as this influence is expressed in "habit" we need not discuss it; for William James has preached upon that subject what has been called the finest psychological sermon in any language,¹ and we will not essay the hopeless task of improving on him. Recent research, particularly by the psycho-analysts, has, however, thrown into relief certain related phenomena, whose educational importance is so great that some consideration must be given to them.

Dr. Ernest Jones observes that he has succeeded by psycho-analysis in tracing back the impulses that led many of his patients to enter upon their professions or occupations to repressed infantile interests directed towards anti-social con-

¹ It will be found in chap. iv. of the "Principles of Psychology" and in ch. viii. of "Talks to Teachers."

duct or unseemly objects. His cases cover a wide range, for they include a well-known constructor of canals and bridges, an architect, a sculptor, a type-moulder, and a *chef*. He admits that other factors besides the unconscious agents he has in view helped to determine the choice of occupation in these cases, but maintains that "external inducements and opportunities . . . important as they may seem to the casual observer, are often but the pretext for the expression of some submerged primary craving."

There can be little doubt that unconscious factors of this kind have, as Dr. Jones says, remarkable tenacity, vigour and durability, and that they control the direction of adult interest to a degree that is very insufficiently appreciated. The most important thing to note is the way in which the energy belonging to these persistent impulses may be transferred, as in the cases mentioned by Jones, from their primary and generally undesirable fields of interest, to others of unimpeachable character and often of high value. This transference is called "sublimation," and is justly regarded by Freudian writers as a process deserving the careful attention of all who have to do with the upbringing of children. Sublimation, it should be understood, does not mean the mere shifting of a stream of general energy from one direction to another—as when a young man transfers to war or finance the energy he has hitherto wasted on "the little emptiness of love." It is the recomposition into a new hierarchy of definite hormic factors—Dr. Jones calls them "biological components"—of which each bears its own specific energy and carries that energy with it into the worthier complex. The teacher who has the insight to detect the unsatisfied hormic factors beneath the surface of a child's or a youth's conscious life, and can contrive to draft them into worthy and satisfying modes of self-assertion, may often save for society a useful and vigorous individuality that would otherwise be lost. This is, we may remark, the secret of the success in reclaiming "young de-

linquents " that was attained in the Little Commonwealth, whose superintendent, Mr. Homer Lane, has traced with profound psychological insight the steps by which the uncompensated repression of natural impulses in childhood often leads to social outlawry in adult life.¹ It is, in fact, unquestionable that the records of psycho-analysis greatly strengthen the argument for making the autonomous development of the individual the central aim of education. They reveal in what dim depths the foundations of individuality are laid, how endlessly varied are its natural forms, and how disastrous it may sometimes be to force upon the growing character a form discordant with its principle of unity.

If it be asked why this truth has so long been ignored and is still so rarely recognized, the answer is that, in ordinary cases, the sublimation of the rebellious or undesirable impulses of childhood takes place without difficulty under the normal conditions of home and school life. The child grows simply and easily into one of the stock patterns of humanity. On the other hand, every school has its problems in the form of boys or girls who "get across" their teachers or their fellows, and are obstinately unresponsive to instruction or in other ways out of touch with the influences of the school society. The short way of dealing with these divergents—the process called "licking them into shape"—has rarely more than a superficial success and often produces lasting harm; for it touches only the symptoms, not the causes of the trouble. The causes are, more often than we suppose, deep-seated impulses which have not found healthy modes of expression, and, their cruder manifestations being necessarily suppressed, sometimes prompt the child to rebellious outbursts incomprehensible even to himself, sometimes make him unteachable or "unclubable." In extreme instances the effect of repressed and unsublimated impulses may even be to isolate a

¹ See, for example, his article on "The Faults and Misdemeanours of Children" in the "Report of the Conference on New Ideals in Education" for 1915 (published by the Secretary, 24, Royal Avenue, Chelsea, S.W.).

child for all practical purposes from the life of his fellows. An instance of this kind has been described to the writer by a highly competent observer—namely, the case of an elementary school girl who, at the age of thirteen, had learnt neither to read nor to write, and had never been known to speak voluntarily at school, but who, when removed to an environment where free expansion was permitted, revealed intellectual ability far above the average and rapidly developed strong and characteristic interests.

No period of youth escapes these disturbances of its peace, but they are especially likely to vex the early years of adolescence. New stirrings then arise that may easily conflict with older systems of impulses which still persist in "the unconscious," and so cause an inner discordance which only sublimation can resolve. The strongest part of the case for universal continuation schools is that, under the conditions of modern life, they, and they only, can provide for the great majority of our boys and girls the means by which that sublimation can be safely accomplished and the conflict of adolescence issue in a character at peace with itself and in full command of its potential forces.¹ For the continuation school, if properly administered, will, on the one hand, open fields of interest for the intellectual and æsthetic impulses that the conditions of industrial employment too often stifle and repress, and, on the other hand, provide a healthy social life to receive and give form to the energies which, in accordance with the inevitable law of human growth, are beginning to turn from their original objective, the home. The paucity of opportunities of this kind for the bulk of our young population has no doubt caused an immense loss of individual happiness and social wealth, and is largely responsible for the "failure of civilization" which present-day moralists are wont to deplore.

¹ See Bompas Smith, "Problems of the Urban Continuation School," in the "Report of the Conference on New Ideals in Education" for 1917.

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BERNARD HART's little book, "The Psychology of Insanity" (Camb. Univ. Press, 1912), is a popular but sound introduction to the study of "complexes," written by a leading psychiatrist. (It should be noted that Dr. Hart applies the term "complex," as it is applied in this book, to *all* mnemonic structures of the type described above, pp. 35-6, while most writers limit it—in the present author's opinion, unfortunately—to *morbid* structures and those that cause "irrational" behaviour.) ERNEST JONES, "Papers on Psycho-Analysis" (Baillière, Tindall and Cox, 2nd edition, 1918), is the best comprehensive introduction to the works of Freud, and has also great original value. MAURICE NICOLL, "Dream Psychology" (Oxford Univ. Press, 1917) is a popular study of the distinctive features of Jung's views, which are given at length in C. G. JUNG, "Collected Papers on Analytical Psychology" (tr. C. Long; Baillière, Tindall and Cox, 1916). W. A. WHITE, "Mechanisms of Character Formation" (The Macmillan Co., 1916), is a useful general review of the ideas of the psycho-analytical school. O. PFISTER, "The Method of Psycho-Analysis" (tr. Payne; Kegan Paul, 1918), is a much more detailed work giving special consideration to educational applications.

CHAPTER VI

ROUTINE AND RITUAL

THE activities of humanity, we have said, may be broadly classified as either conservative or creative: conservative when their aim is to preserve in the face of a changing situation some *status quo ante*, creative when their aim is some positive new achievement. The distinction must not be confounded with the distinction between *horme* and *mneme*. Men often throw their energies most strongly into the maintenance of what is and show only a lukewarm interest in what might be. In short, conservative and creative activities are equally natural, and in a sense equally important expressions of human energy, though, taking a long view, we must no doubt think of the former as existing for the sake of the latter.

These remarks have a clear educational application. A school fails to fulfil its purpose unless it is a place where the young are taught to accept and to maintain the best-tested traditions of thought and action handed down from the old time before them. Again it fails unless it serves as a "jumping-off place" for a generation trained to be eager for new adventures in life. This statement would be paradoxical if youth were not so made that it solves *ambulando* the problem of being at the same time both Tory and Radical. The famous pronouncement of the sentry in *Iolanthe*,

That every boy and every gal
Who's born into this world alive
Is either a little Liberal
Or else a little Conservative,

needs, in fact, important qualification. All children belong to both parties and intermingle their loyalties without any scruples. We propose in the present chapter to contemplate them when the conservative mood is most pronounced, in the next when their initiating impulses are most in evidence.

Let us begin, then, by observing that the irreverent radicalism of young children is curiously streaked with conservatism of a pronounced and uncompromising type. Ruthless disturbers of our peace, irrepressible questioners of our way of life, children are yet great sticklers for law, order, and propriety, and so tenacious of tradition that their favourite toys are among the most venerable monuments of civilization, and their customary games the last stronghold of faiths that swayed mankind when the world was young. Every woman who has taken charge of another's nursery knows how serious a matter it is to disregard the established precedents in washing and dressing, to violate the ritual of mealtime and bedtime; and any one who, in telling children a familiar story, carelessly takes liberties with the text will promptly be made aware of the magnitude of his indiscretion.

In behaviour of this pattern there is something more than mere resistance to change; there is an active reassertion of the past, a positive love of repetition of the familiar. Favourite games of infancy, such as "Ring a ring of roses" or "Here we come gathering nuts and may," exemplify that love—which we may conveniently refer to as the "routine tendency"—both in the actions and in the accompanying jingles; while for an illustration of the same factor in favourite stories it is enough to mention that classic of the nursery, Southey's masterpiece, "The Three Bears."

The crude repetition which forms the salt of so many childish amusements becomes, when elaborated and refined, the rhythmic repetition of the dance, the song, the ballad, the ode, and other forms of art. There can be no doubt that the love of rhythmic repetition springs from sources almost as deep

as life itself. Rhythm rules in physiological activity, in breathing, in the circulation, in muscular action, in anabolism and katabolism. In many ways, obvious or hidden, the life of man moves obedient to the cosmic rhythms of the day and the year. It is natural, then, that the perception and creation of rhythm should be enjoyable and should, among other things, play an important rôle in the evolution of art. It is not surprising to find that among primitive peoples the rhythmic element in music is often highly developed, while the harmonic and even the melodic element is still rudimentary. Much the same was true of Greek music and for the same reason—namely, that the rhythm of music comes from the dance, and dance-rhythms are only the physiological rhythms of natural movement elaborated and formalized. The repetition and “balance” of pictorial and plastic art and the arts of weaving and embroidery are but expressions of the same factor in other media.

The modern school, following more closely the example of the Greeks, would do well to exploit more consciously and thoroughly than at present the natural love of rhythm. Teachers of “eurhythmics” are seeking to do this in connection with dance-movement and musical appreciation. The simpler and less technical of their exercises might, with great advantage, be taught in all primary¹ schools if only for the sake of fostering good manners, and the dignity and grace of movement which the word *eurhythmia* (εὐρυθμία) implied to the Greeks. It should be remembered, too, that rhythm makes appeal to the reason as well as to æsthetic sensibility. In the teaching of geometry, for instance, much more use might be made of the powerful and satisfying “principle of symmetry.”

As a child grows older the whimsical impulses in which the routine tendency is at first exhibited shape themselves

¹ This term, wherever it occurs in the following pages, means any school for children between the ages of six and twelve.

into more or less conscious conformity with ideals of conduct and social order. We shall deal later with the relation of the tendency to the "moral sense," but we may note at once the importance of its connection with the problem of school and classroom order—or, as it is less properly called, discipline.

Professor Graham Wallas has remarked¹ that "half-conscious imitation . . . makes the greater part of classroom discipline." The statement explains the form taken by school and classroom order, but accounts only partially for its maintenance as a permanent feature of the social life. To understand this fully we must view it as an operation of the routine tendency, which, when a way of life has once been established, works powerfully to make it permanent. The prudent teacher who recognizes this fact will throw upon that tendency the main part of the burden of maintaining order. He will first take care that the business of the school or the classroom is conducted in accordance with an adequate but simple routine, and will then leave it, as far as possible, to "run itself." He will not check developments of the constitution if they are spontaneous and harmless, but will abstain from introducing unnecessary or irritating innovations of his own. He will do wisely to tolerate even an unsatisfactory constitution if it has the force of the routine tendency behind it, and to wait patiently and work cautiously for its amendment. His attitude towards rebels will not be that of an autocrat whose personal will has been flouted, but rather the attitude of one responsible only as *primus inter pares* for the maintenance of a customary order upon which the convenience of all depends. In fine: the routine tendency should be allowed to act in school, as in the wider social community, like the flywheel whose momentum keeps a machine in orderly motion, overcomes obstacles and carries it past the "dead-points," where the prime motive forces cease for an instant to act.

At a higher level of activity the same tendency helps

¹ "Human Nature in Politics," p. 28.

greatly to maintain the "tone" and the "tradition" in which school discipline, as distinguished from mere order, may properly be said to reside. That is, it helps to secure the continuity in the school of a characteristic *ethos* and of a social custom touched with emotion—things which affect, often in the strongest manner, the young minds that are steeped for sufficient time in their influence. Here we have exemplified on a small scale the phenomena of "social heredity," whose most impressive manifestation is the survival of nations, like Serbia or the Ukraine, after centuries of submergence.

If conservatism, in the active form of the routine tendency, is so conspicuous in early life, it is natural to suspect that it has for the young a utility distinct from its utility to the old. The suspicion is well founded. Old age clings to the familiar and the customary because it has no longer the energy needed to open out new paths of thought and action; its self-assertion is reduced to self-maintenance in the face of a world growing always more intractable. In childhood, on the contrary, the routine tendency is an expression of superabundant activity. The child hungers to use his growing powers of body and mind, but his repertory of accomplishments is narrowly limited; he loves, therefore, to repeat the familiar, because he gets from it the fullest sense of effective self-assertion.

This observation has great practical importance. Modern teachers in their zeal for cultivating the "self-activity" of children are prone to neglect the significance of the routine tendency. Reacting too far from unintelligent practices of former days, they avoid the repetition of the familiar, dismissing it as "mechanical" or as "mere memory work," with the implication that it is somehow out of place in modern methods. They forget that children delight in it for the sound biological reason that it is an indispensable means to mastery of their little world. The young teacher may, then, safely disregard the view that the repetition of "tables,"

dates, grammatical paradigms, arithmetical or algebraic operations is unpedagogical because it has to be forced upon unwilling nature. The child who rejoices in his power to repeat the jingle "Ena, dena, dina, do" will not fail to delight in a mastery over more serious forms of routine.

This consideration does not, of course, absolve the teacher from the duty of making an intelligent use of the child's love of repetition. Dates should be memorized in order to support, as by a firm chronological skeleton, a body of historical information and ideas that would otherwise be vague and incoherent; the recitation of grammatical routines should be employed to fix knowledge abstracted from concrete linguistic usages;¹ the mastery of algebraic manipulation should subserve immediately the needs of mathematical thought and should not outrun them; and so on in other cases. It has been suggested that the memorizing of verse and prose does not fall under this rule, and that the child's immediate pleasure in routine-action may legitimately be exploited as a means of storing his mind with passages whose meaning and literary worth he cannot be expected to appreciate for several years. The soundness of the opinion is questionable. It is true that a literary masterpiece, however simple in form, often has depths of significance and beauty beyond the reach of young minds. Unless, however, it has some intelligible message for them, it is highly doubtful whether the routine tendency should be set to work on it.

The foregoing principles have an equally direct bearing upon the pedagogy of the arts and crafts. An excellent authority has urged that a child who has once achieved a piece of constructional work should not repeat it, but should move on to a fresh exercise, involving new neuro-muscular co-ordination and leading to new ideas. He is surely wrong here.

¹ As in the case of the "litanies" described in R. B. Appleton, "Some Practical Suggestions on the Direct Method of Teaching Latin" (Heffer and Sons, 1913).

As we shall see later, mastery of one's material is a prime condition of æsthetic "self-expression"; no solid progress in the constructive arts, drawing and music, is possible without the constant repetition of familiar processes until one has them at the finger-ends. The only qualification this statement needs is that technical exercises should never be merely a grammatical drill isolated from creative work. Thus the beginner's "five-finger exercises" and corresponding exercises in singing should always be melodious; and the mastery of constructional technique should be acquired by making things that are desirable in themselves. At a later stage technical exercises, such as practice in joint-making in carpentry or in button-holing in needlework, may take a more abstract form; but they should always be of the nature of "studies" for substantive constructional work which the young craftsman or craftswoman has immediately in view.

We turn now to another type of routine-actions of which we have familiar instances in the ceremonies used in laying a foundation-stone, at weddings, at the coronation of a king, and in the office of the Mass. The character and sequence of such routines are often jealously preserved and faithfully transmitted through long periods of time, but they are clearly distinct in their functions from those we have hitherto studied. Those routine-actions had substantive value—that is, the actions were in themselves desirable and desired. The value of these consists not in themselves, but in what they symbolize. In brief, their biological utility lies in their power of arousing in actors and spectators, as often as they are repeated, states of feeling or emotion that are frequently of great social importance.

The most convenient name for these symbolic routine-actions is *ritual*. Ritual fills in the life even of the sober Englishman a place larger than is commonly recognized; but the ritual observances of the most emotional civilized people are only shreds and patches of the elaborate practices

of primitive tribes.¹ For instance, May Day rites, now scarcely more than a memory in this country, are remnants of ancient festivals which, though taking different forms among forest-dwellers, agricultural folk and pastoral people, were always mimetic shows of "the seasons' difference," conventionalized, and fixed in form by a sacred tradition. They were enormously important to the public welfare; for, as everybody knew, the ritual, duly performed, had power to compel the earth to bring forth its kindly fruits in due season. The modern sociologist, who has other views on agricultural science, must still admit the psychological efficacy of the rites. For if they did not directly make the corn grow, they did so indirectly by transmuting vague anxiety about the food supply into an exalted corporate emotion that could not fail to inspirit and co-ordinate individual effort.

Good authorities maintain that both theology and art took their beginnings from ritual observances of this kind. For example, it is suggested by Miss Jane Harrison that belief in the god Dionysos may have sprung from a vivid way of conceiving the common and therefore permanent elements in the yearly rite of "carrying in the summer." Where a may-pole was the centre of the rite he would be conceived as a Tree-god, where a holy bull was the focus of the ritual as a Bull-god, and so on. When life became easier and the social structure more complicated, the practice of the ritual would tend to become a professional business rather than a universal obligation. In this way the rites of Dionysos seem to have developed into that wonderful and sophisticated thing, the Greek tragedy; that is to say, ritual passed into art. Nor is this statement to be restricted to the drama and the arts immediately connected therewith. To a large extent, we are told, Greek sculptural art "comes out of ritual, has ritual

¹ See Dr. W. H. Rivers', "The Todas" (Macmillan, 1906) for a striking account of the immense importance of ritual observance in the life of a primitive people; also Spencer and Gillen, "The Native Tribes of Central Australia" (Macmillan, 1899).

as its subject, *'s embodied ritual'*; while even "drawing is at bottom, like all the arts, a kind of gesture, a method of dancing on paper," and is therefore derived in the long run from ritual.¹ Meanwhile among simpler or ignorant people the ancient rites, often, it is true, sadly maimed, have persisted side by side with their cultivated derivatives and continue to perform their primitive function as magical practices or as vehicles of lively social emotions. We still break a bottle of wine over a newly-launched ship "for luck," the Swabian peasant still leaps high over his hemp so that it may grow tall, while in the Christian villages of Thrace, the original home of Dionysos, "a drama is still annually performed which reproduces with remarkable fidelity some of the most striking traits in the Dionysiac myth and ritual."²

To suppose that modern art and religion draw their strength exclusively or even largely from these ancient sources would be to make a profound error. Nevertheless, if there is any validity in the recapitulation-theory (p. 39), ritual, properly employed, should still have an important function in school-life. The success of such revivals as historical pageants in honour of the *genius loci* of some ancient city or shire, the annual performance of mystery-plays, village dance-festivals, and other reactions from the drabness of nineteenth-century life, shows that even in the greater world ritual retains its power to communicate and exalt feeling among masses of people. We may, therefore, with greater confidence give it a larger place in the education of the young, using it as a means of intensifying and purifying social emotion. The main conditions of success are that the occasions shall be worthy and the expression sincere. Athletic festivals fulfil the second condition, but occasions better, or at least more varied may easily be found. The seasons are still venerable deities whom

¹ This explanation has been applied to the wonderful drawings of the cave-men of Altamira. See Sollas, "Ancient Hunters."

² J. G. Frazer, "Spirits of the Corn and Wild" (pt. v. of the "Golden Bough"), vol. i., pp. 25-9.

children will delight to honour by song, procession and ritual dance.¹ For older boys and girls the festivals may be associated with important events in school-life—such as the appointment of prefects and the dismissal of senior scholars into the world—or with civic and national interests and history. In all cases it is important that the ritual should not bear too obviously the stamp of external authority, but should, as far as possible, be crystallized and refined from spontaneous movements among the citizens of the school society. It should give work for the young poets, musicians, actors and craftsfolk, and should provide a place for the ungifted girl or boy who can only carry a flower or join in a chorus. We may add that valuable hints with regard to suitable occasions and forms of ritual may be derived from a study of the ceremonies prescribed for use among “wolf cubs” and boy scouts.

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J. SULLY, “Studies of Childhood” (Longmans, new ed. 1903) gives a pleasing account of the facts referred to at the beginning of the chapter. The quotations towards the end are mostly from MISS JANE HARRISON’S little book, “Ancient Art and Ritual” (Home Univ. Library, 1914). C. DELISLE BURNS, “Greek Ideals” (Bell, 1917), gives a vivid picture of the importance of public ceremonial in ancient Athenian life. F. H. HAYWARD and A. FREEMAN, “The Spiritual Foundations of Reconstruction” (P. S. King, 1919), deal specially with the use of ritual in school-life, but appeared too late to be consulted.

¹ The May Day festival seems to be growing in popularity in London Elementary Schools, and is often made a means of valuable culture in manners, music and dancing.

CHAPTER VII

PLAY

THE creative activities of youth have, like the conservative, a typical and pronounced form of manifestation. It is play.

The spirit of play is an intangible and elusive sprite, whose influence is to be found in corners of life where it might least be expected. Everyone agrees, however, that childhood is her peculiar sphere, and that she manifests her presence there in activities whose special mark is their spontaneity—that is, their relative independence of external needs and stimuli. It is for this reason that play is commonly interpreted as an expression of “superfluous energy.” During childhood and youth, it is said, the organism has at its disposal more energy, both physical and psychical, than it needs either for mere self-maintenance or for physical growth, and it expends the surplus largely in the form of play.

Upon this view a child at play may be likened to a locomotive engine which has taken from the coal more energy than is needed to draw the train and is therefore compelled to “let off steam.” The analogy is, however, defective in one important respect. In the modern railway engine some of the energy not required for locomotion is employed to exhaust the vacuum brakes and warm the carriages. Without much extravagance of fancy we might suppose this use of the superfluous energy to be considerably extended. For example, the driver, instead of blowing off steam in a station, might direct it to a small rotary press in the guard’s van, where a few copies of the next month’s time-table might be printed. But

the liveliest imagination cannot conceive it as used to improve the engine itself, to make the boiler tubes more efficient, or to increase the harmony of relations between pistons, cranks and wheels. Yet in the psychophysical organism play does something precisely comparable with this. In play—first the play of arms and legs and fingers as the babe lies in his cradle, then run-about play, and later the formal games of the playground and the field—the child gradually enters into possession of his own body, and raises his command over it to the highest possible power. Again, he finds and exercises in play his intellectual gifts and powers, and often discovers the interests that are to fill the central place in his adult life. Lastly, it is a commonplace that, just as of old the Hellenic ideals of life and conduct were fostered and spread by the great games and festivals, so to-day many a boy finds and establishes his moral and social self largely in the corporate games of adolescence—a statement which is becoming increasingly true of girls also.

These familiar facts all illuminate a single truth—namely, that the play-activity is subject to the general law that spontaneous activity, when not baffled or obstructed by unfavourable circumstances, tends always towards increasing perfection of form, to more complete expressiveness, to a higher degree of unity in diversity. Thus we are led to the idea that nature invented play not merely as a means of disposing harmlessly of the young animal's superfluous energy, but as a device for using that energy to prepare him for the serious business of life.

This view of the biological utility of play was suggested long ago by the philosopher Malebranche,¹ but was first fully formulated and defended by Karl Groos.² Groos's theory is based upon two observations. He notes first that play is confined to animals which are at birth not sufficiently developed to

¹ See Drever, "Instinct in Man," p. 33.

² In "The Play of Animals," 1896, and "The Play of Man," 1898.

face the difficulties of life without the help and protection of their parents. The puppy, born blind and helpless, enjoys some months of undiluted play; the chick, who, a few minutes after he is hatched, can pick up a grain of rice or tackle a worm, affects *ab ovo* an almost puritanical severity of behaviour. Secondly, Groos bids us observe that when an animal plays he always imitates in sport what will be the serious activities of his adult days. The kitten hunts a ball of wool as he will later hunt a mouse; the puppy chases and dodges his brother as he will some day chase and dodge his prey or his foe. When these facts have once been perceived, the interpretation is easy. A playful youth is a biological device to secure to the higher animals an efficient equipment for the battle of life. It is not so true, says Groos epigrammatically, that animals play while they are young as that they are young so long as it is necessary for them to play, in order to prepare themselves for the serious business of adult life.

There is no difficulty in extending this explanation to the play of childhood. The devotion of the little girl to her doll is the capital instance of a playful activity which is plainly anticipatory of the serious business of adult life. A similar interpretation may be applied to other games, which recur with unbroken regularity in every generation and among children of every colour. There is, however, in respect of play, as in respect of all mental phenomena, a most important difference between man and the lower animals. The adult activities of these are relatively few and relatively constant in pattern. Consequently the play of each species is stereotyped and shows little variety. On the other hand, the adult life that awaits the child is very largely undetermined. Nature, therefore, while she bids the young beast rehearse in sport just those activities which he will certainly use some day in earnest, prompts the boy to experiment in his play with an endless variety of possible lives. In this way we may account on bio-

logical principles for the incessant "make-believe" which is so universal a characteristic of childhood.

According to Karl Groos, then, play, biologically considered, is anticipatory. According to another interpreter, Professor Stanley Hall,¹ it is often more properly to be regarded as reminiscent. In his view, the plays of childhood are simply incidents in the recapitulation, which the life of every individual exhibits, of the history of the race. For example, the absorption of the boy of nine in imaginary hunting and bloodshed is, like the characteristic bodily form at that age, a momentary representation of a pigmoid or Bushman stage which the race has long left behind. These developmental incidents may have no more direct reference to adult needs than the tail of the tadpole has to the needs of the frog. Nevertheless, says Stanley Hall, their transitory appearance in due course is necessary to a healthy manhood just as the batrachian must produce and absorb his tadpole tail before he can settle down as a reputable frog.

When we ask for the biological reasons why the play of childhood should thus keep alive the memory of "old unhappy far-off things"—phases in the racial history which had better be forgotten—Stanley Hall tells us that they are often cathartic in their operation. Man cannot shed altogether the ancient tendencies to cruelty and vice, but play is at once a means by which the mischief may be taken out of them and a means by which they may be transformed into impulses of ethical value.

In Hall's opinion Groos's account of the subject is "very partial, superficial and perverse." It is, nevertheless, permissible to suggest that the two theories are complementary rather than opposed. Thus it may be true that spontaneous play often derives its typical features from the adult life of distant ages, and also true that these racial memories still reawaken in each generation because they have a direct value

¹ "Adolescence," vol. i., ch. iii.

for the adult life of the present epoch. Or, putting the same point in another way, we may hold that the atavistic factors are the mnemonic basis from which the child's forward-directed hormone proceeds, while the "cathartic" action of play is the sublimation of the energies associated with them.

If we thus assume that the rival theories differ chiefly in emphasizing different aspects of what is at bottom a single phenomenon, we shall be free to use them both in accordance with their relevance to particular cases. For example, Stanley Hall's view is most helpful in the case of play which, like dancing and out-door games, is fundamentally a motor phenomenon. His dictum that "play is the purest expression of motor heredity" is here peculiarly illuminating. It leads straight to the idea that the substitution of dancing, eurhythmics and acting for some of the more formal physical exercises may not only help the Briton to take his pleasures less sadly, but may be the best of ways of securing for him mastery over the body which he has inherited from his forbears. Moreover, it gives at least some support to the speculation that our native dances, now being rescued with the old folk-songs from the wreck of time, may be a better medium for the physical culture of the young Anglo-Saxon than the saltatory idioms of the Latin races or the Slavs.

On the other hand, where play engages the intellect rather than the body, Groos's interpretation is the more instructive and, as we shall see later, the more fruitful from the standpoint of the educator.

The "superfluous energy" theory, illuminating as it is, does not, in its direct form, cover all the ground.

Consider, for example, the weary child who forgets his aching legs when the monotonous walk is turned into a game of hide-and-seek, or the tired man who returns to his work refreshed from a game of billiards or golf. It is clear that play is in these cases not a channel of discharge for superfluous energy, but a means by which new energy is placed at the dis-

posal of the organism. According to the common explanation, the efficacy of such "recreative" play lies in the fact that it uses the energy of fresh tracts of the nervous system and gives the exhausted tracts time to get rid of the chemical poisons which have accumulated in them and to make good their losses by anabolism. The examples here given, especially the former, show that this explanation is quite insufficient. Under the influence of play, the child not only continues the activity which had wearied him, but actually puts twice as much vigour into it.

It is probable that a better explanation will be found in one of the many profound and illuminating ideas which psychology and education owe to Professor W. McDougall. In a notable study of fatigue,¹ McDougall quotes instances to prove that the energy we can expend upon a certain kind of work is not necessarily limited to the energy resident in the nervous machinery which is directly concerned in its production. Many cases of long-sustained activity would be unintelligible unless we could suppose that the brain structures involved in them import energy from sources outside themselves.² Further, he identifies these sources with certain structures whose functioning is believed to be necessary to the manifestations of the innate "dispositions" (*i.e.*, racial engram-complexes), which are the great springs of behaviour both in beasts and men. It may be suggested, then, that in recreative play we have phenomena essentially the same as those which McDougall describes. The task which the appropriate physiological mechanism has insufficient energy to perform is conquered by means of energy drawn from the more massive inherited engram-complexes. So the hardships of a river picnic

¹ "Report of the British Association," 1908.

² McDougall quotes from William James the case of Colonel Baird Smith, who, during some months of the siege of Delhi, hardly ate or slept or rested in any way, but worked almost continuously at tremendous pressure without showing or feeling fatigue. This example could be paralleled by many instances taken from the Great European War.

may be endured joyfully by virtue of the energy derived from a mild and perfectly conscious flirtation. So the boy at the bottom of the class can perform prodigies of learning when he is fighting for his side in a Latin match between opposing teams.

It will be profitable to restate this argument in a way more obviously congruent with the general tenor of our doctrine of vital activity. We are concerned with movements of self-assertion which are on the point of failure because the impulses behind them are obstructed or exhausted, and what we see is that such movements may often be saved from extinction by being transformed or absorbed into other modes of self-assertion, whose basis in the organism's disposition is more firmly established and whose energy is still fresh. Expressed thus, the explanation is not only brought into an interesting connection with the theory of sublimation, but is also seen to have significance for education far beyond the facts of recreative play.

The types of play-activity called "games" and "sports" are generally spoken of as recreation, and it may be granted that they frequently perform the function we have ascribed to recreative play. It should, however, be noted, first, that they often serve merely as vehicles for the direct discharge of superfluous energy; and, secondly, that they often perform a function, distinct both from this and from recreation—a function best described as "relaxation." To understand the biological meaning of relaxation, we must first observe that games, such as football and dancing, and sports, such as hunting and fishing, differ from inventive or imaginative play—the former in that they are activities ruled by a definite formula or routine, the latter in that they are behaviour coming obviously under Hall's theory of atavistic reversion. They are alike, then, in being activities based directly upon elements deeply rooted in the agent's disposition. In other words, the hormic systems that come into action in games and sports are always

firmly consolidated and are often, in addition, of great anti-quity. This fact accounts, in the first place, for the readiness with which they become vehicles for the discharge of superfluous energy. It also accounts for their use, both by adults and by young people, as means of relaxation. The daily work of the business or the professional man, especially in a highly organized modern community, throws a great strain upon the organism; for it involves the action and maintenance of extremely elaborate and artificial hormic systems. From time to time, therefore, the agent seeks relief by simplifying his life—that is, by turning to activities that involve less complex and more firmly established hormic systems. These he finds in games and sports. He deserts his office for the golf-links, or flees from his “practice” to a trout stream in the quiet depths of the country. For the same reason the school-boy welcomes the moment when he may escape from the oppressive labour of classroom or study to the playing field or the river.¹

Changing the standpoint we have now to inquire what are the distinctive marks of play as a mode of experience. The reply frequently given is that play is activity pursued for its own sake *as* activity and without regard to any value in the product. It is thus contrasted with work, in which the activity is pursued for the sake of some further value beyond itself. We must concede a certain validity to the statement. An adult often makes this distinction between his work and his play, and even young children may be obscurely aware of something equivalent to it. For instance, the Directors of the Caldecott Community² remark that “at one time it was hoped

¹ See G. T. PATRICK, “The Psychology of Relaxation” (Constable, 1916). This writer invokes the same biological conception to explain the present vogue of the “photo-drama,” the psychological function of profane swearing, the use of strong drink, and the periodic relapse of civilized peoples into the barbarism of war. The reader may attempt, as a rider on the foregoing argument, to account himself for these several forms of “relaxation.”

² In their Report for 1916–17 (obtainable from the Secretary, Charlton, near East Sutton, Kent). One of the Directors, Miss Rendel, has contributed an account of the Community to Clarke Hall’s “The Child and the State” (Headley, 1917).

that no hard-and-fast line would need to be drawn between work and play, but that the term 'occupation' might cover activities of study and playroom alike. A certain standard of work, however, is demanded in the schoolroom, even by the children themselves, whilst during playtime no standard is required; and this seems to constitute the essential difference between the two."

Interesting and important as this observation is, we must be careful as to what general conclusion is drawn from it. It is notorious, for example, that among the boys and sometimes even the masters¹ of our public schools it is play rather than work that is felt to have value beyond the activity itself, and to impose upon the agent a high standard of aim and disciplined effort. And among adults we have the musicians and actors, who accept the name of "players" but would resent the suggestion that their activities have no value and are unruly by standard as bitterly and as justly as they would the implication that their "playing" is not work.

These are not exceptional or unfair instances. They merely show, in a specially clear way, that, as Mr. F. H. Bradley has urged,² it is impossible to maintain a psychological antithesis between play and work. What, then, is really the distinction which the rejected antithesis misrepresents? Here we will accept Mr. Bradley's further guidance. According to his analysis the psychological colour of our activities is chiefly due to two factors which enter into them in varying proportions. One of these factors consists in the conditions which are imposed on the agent *ab extra*; the other is his spontaneity. The difference between the two appears readily in the analysis of any activity—for example, eating one's dinner. The mainspring of this activity is obviously an imperative, which no one can ignore and live. Nature says: Thou shalt eat.

¹ The character called "The Bull" in Alec Waugh's much discussed novel, "The Loom of Youth," illustrates the attitude strikingly.

² In his article, "On Floating Ideas and the Imaginary" (*Mind*, N.S., No. 60).

But she leaves a fortunate minority of us considerable freedom to choose the matter and the manner of our eating. We may dine in slippered ease on a chop at home, or we may go forth in state to an eight-course banquet at a fashionable restaurant. The boundary between spontaneity and external constraint shifts, of course, from case to case. At the gorgeous tables of the great there may be many hankerers after the simple life. They hate the *Persicos adparatus*, but their circumstances of life cause these to be among the unalterable conditions of dining.

In this illustration the external constraint is ultimate. I need not necessarily eat here or thus, but eat somewhere and somehow I surely must. In other forms of activity the constraint which limits the activity is not ultimate. Thus, if I play football or auction bridge, I am bound by the rules of the game; but the acceptance of the rules is itself voluntary. I can escape them by standing out of the game or by persuading my companions to adopt a new code. But if I decide to "play the game," my spontaneity must limit itself to the operations of attack, defence and finesse which the rules sanction and the tactics of my opponents leave possible. Similarly if I decide to fill the rôle of Hamlet in a performance of the tragedy, Shakespeare's text becomes a condition of restraint, and spontaneity is limited to "interpreting" the poet's lines.

Here, then, is the basis of the limited validity we grant to the antithesis between play and work. An agent thinks of his activity as play if he can take it up or lay it down at choice or vary at will the conditions of its exercise; he thinks of it as work if it is imposed on him by unavoidable necessity, or if he is held to it by a sense of duty or vocation. For in activities of the former class spontaneity rules almost unchecked, while in those of the second kind it is frequently obstructed by conditions of constraint. But where spontaneity is able to triumph over the constraining conditions, the

experience has always the quality typical of play, whether the activity be called "play" or "work"; from the inner standpoint, the two become, in fact, one and indistinguishable. Thus, if I am a successful engineer, or an inspiring teacher, or a skilful surgeon, my "work" may have all the felt qualities of play; while if I am a duffer at my profession its exercise may be an intolerable burden. In short, the play-experience is, as Mr. A. F. Shand has pointed out,¹ inseparably connected with joy. On the one hand, joy tends naturally to express itself in the physical movements and the imitations of serious activities which are typical of children's play; on the other hand, any task becomes play to the man who can do it with the ease of mastery which brings joy in the doing.

The connection which languages so commonly recognize between "playing" and the arts of music and the drama has been made by some thinkers, notably the poet Schiller, the basis of a philosophy embracing all art in its scope. This affiliation of art to play is far from implying a mean estimate of the artist's labours. It proceeds from the sound observation that the soul of art, like that of play, is the joyous exercise of spontaneity. Even in cases where poets "learn in suffering what they teach in song," we may be sure that they find a rich, if austere, joy in their power to transmute their sorrows into pure and noble self-expression. Again, art is continuous with play, inasmuch as it exhibits on a higher level of seriousness and value the submission of energy to form. Just as the delight of the true cricketer is not in the mere expenditure of physical energy but in the expression of his strength in the disciplined forms prescribed by the tradition of the game, so the nobler joy of the painter, the sculptor, the poet, the musician comes from the triumphant expression of spiritual energy through "significant forms." We may expect, then, as Schiller has profoundly observed,² that the nature of a

¹ "The Foundations of Character" (Macmillan, 1914), bk. ii., ch. viii.

² "Ueber die ästhetische Erziehung des Menschen," Letter 15.

people's play will foreshadow the quality and value of their art. It is not an accident that the noblest achievements of antique art were won by the race that cherished the humane and healthy Olympic games, not by the race that loved the horrible sports of the gladiatorial arena.

The reader may profitably reflect upon the connection between Schiller's doctrine and the remarks about the cultivation of ritual which we made in the preceding chapter. Meanwhile let us note that a doctrine similar in essentials to Schiller's theory of "pure" art has been applied by William Morris and other modern writers to craftsmanship. In their view beauty in craftsmanship is a play-phenomenon; for it is simply the disciplined expression of the maker's delight in a process he has learnt to carry out with the ease of mastery. Let us suppose that we could have watched the early stages of one of the crafts to which the primitive masters of mankind devoted their genius—for example, the manufacture of flint weapons or of earthen pots. However great the ability that was brought to bear upon those inventions, there is little doubt that the bare solution of the problems they presented absorbed it all. The first spear-heads were merely things that would pierce the body of a beast or a foe; the first pots were merely things that would hold water and resist heat. But as repetition of the process brought skill and mastery over the materials, the bare solution of the problem demanded less and less energy, and more was available for other purposes. Given that the craftsman took pleasure in his work and that his labours were inspired by worthy emotions, the "superfluous energy," says the theory, would inevitably express itself as beauty. The flint weapon, the pot, became more than a mere weapon, a mere pot; they became beautiful.

This doctrine has great importance for æsthetic education. It teaches that the power to produce beauty is not a gift grudgingly given by the gods to a mere sprinkling of fortunate beings; but an ability which, though varying in strength,

like other abilities, from individual to individual, is yet as universal as the power to learn arithmetic. Let boys and girls make under conditions that stimulate the natural flow of energy, let their social *milieu* be free and humane, let them acquire by pleasant repetition (see p. 62) the mastery that enables them to *play* with their materials—and beauty will inevitably appear, though in varied measure, in the things they create.

We turn now to another element in play upon which much stress is commonly laid—the element of “make-believe.” In considering it we must beware, as Mr. W. H. Winch warns us,¹ of reading phenomena of adult life into the play of children. To the adult mind no distinction seems so evident and so sharp as the distinction between the hard, cold world of objective fact and the subjective world of purpose, thought and fancy. We are prone to forget that the child does not find this distinction ready made for him, but has, by gradual and often painful experience, to discover its existence and nature. Thus, as Winch urges, much that is attributed to the child’s faculty of making-believe may be due not to the transforming power of imagination but to ignorance and a sheer inability to see the world around him as it really is.²

Where making-believe indubitably takes place its function may usefully be compared with what happens in cases of conflict between two hostile complexes or systems of ideas and emotions in a diseased mind. Very generally one of these drives the other entirely out of the field of attention—as when a lady,³ who constantly maintains that she is the rightful Queen of England, ignores the incompatibility of her royal status with the lowlier duties of charring by which she earns her living. The normal child at play has the same power

¹ “Psychology and Philosophy of Play” (*Mind*, N.S., vol. xv.).

² Compare R. L. Stevenson’s remarks on children’s imagination in the essay on “Child’s Play” in “*Virginibus Puerisque*.”

³ This illustration is taken from Bernard Hart, “Psychology of Insanity” (Cambridge Manuals of Literature and Science).

of ignoring realities that challenge the truth of his ideas. "The chair he has just been besieging as a castle, or valiantly cutting to the ground as a dragon, is taken away for the accommodation of a morning visitor, and he is nothing abashed; he can skirmish by the hour with a stationary coal-scuttle; in the midst of the enchanted pleasance he can see, without sensible shock, the gardener soberly digging potatoes for the day's dinner."¹

In other cases of insanity the complexes are so equally matched that neither can suppress the other, and a *modus vivendi* must somehow be found. This is generally made possible by a supplementary set of ideas which—simply because they reconcile the incompatibility of the original complexes—may be embraced by the patient with the utmost fervour of belief. Thus the rightful Queen of England may become convinced that her actual humble position is due to a conspiracy to keep her from her throne, and finds evidence of the plot at every turn.

By precisely similar devices, adopted with something of the same conviction, the child is wont to reconcile facts and ideas whose warfare would disturb his mental peace. Here, often, is the explanation of a child's fibbing and of his inability to keep the memory of facts free from the embroidery of fable. It is, further, one of the commonest features of his "make-believe" play. From Stevenson's mine of illustrations comes a gem of the first water. It is the story of a little boy who could join in a game of football only upon the theory that it was a battle, and "was mightily exercised about the presence of the ball, and had to spirit himself up, whenever he came to play, with an elaborate story of enchantment, and take the missile as a sort of talisman bandied about in conflict between two Arabian nations."

Instances such as these show that the mind of a child at play may, like the mind of an insane adult, be at the mercy

¹ Stevenson, "Child's Play."

of a group of ideas which, though it has little or no relation to the actual world, may capture and control the whole current of his consciousness. Stevenson tells us how for weeks together a child may be unable to deal with the most ordinary and humdrum situations of life except in terms of the fancies dominant at the moment. "Perhaps," he writes in an admirable passage, "the most exciting moments I ever had over a meal were in the case of calves'-feet jelly. It was hardly possible not to believe . . . that some part of it was hollow, and that sooner or later my spoon would lay open the secret tabernacle of the golden rock. There, might some miniature Red Beard await his hour; there, might one find the treasures of the Forty Thieves and bewildered Cassim beating about the walls. And so I quarried on slowly, with bated breath, savouring the interest. Believe me, I had little palate left for the jelly; and, though I preferred the taste when I took cream with it, I used often to go without, because the cream dimmed the transparent fractures."

The analogy between the child's making-believe and some phenomena of insanity is instructive, but it must not be pressed too far. A child's mind is rarely so securely bound to its fancies that it cannot escape from them easily enough if need arise; and, as Stevenson points out, a single touch of pain will suffice to bring him back to the actual at any moment. Moreover, there is a fundamental difference between the deeper significance of making-believe and insanity which their formal resemblance must not lead us to overlook. The delusions of the insane are not merely the jangling of sweet bells out of tune. They can generally be interpreted biologically as the refuge of a weak spirit which cannot bear "the weary weight of all this unintelligible world." They are the expression of a *defect* of energy. The strong mind takes arms against a sea of troubles and, by opposing, ends them. The weak mind gives up the attempt to maintain relations with the whole of the real environment, and simplifies

the problem by ignoring a great part of it. On the other hand, the making-believe of the child is, as we have seen, an expression not of a defect, but of an overplus of energy. The *élan vital* which drives the child along his life's course is not wholly absorbed by the activities necessary to maintain relations with the actual world. It urges him to multiply and enrich his experiences, to enlarge his soul by experiments in a thousand ways of life. Insanity is a phenomenon of shrinkage, of decay; the child's making-believe is a phenomenon of expansion, of growth.¹ Unable, through weakness and ignorance, to bend the stubborn reality of things to his will, to achieve his far-reaching purposes objectively, he employs the magic of making-believe, as Aladdin employed the genie of the lamp, to supply the means his ends demand, to remould the world nearer to his heart's desire.

According to this explanation the child's habit of making-believe does not imply that he prefers his fantasy-world to reality. It is merely a biological device to secure that his self-assertion during the formative years of life shall not be frustrated by his inability to control the real conditions of his activities.² We should expect, therefore, that as age brings fuller knowledge and completer command of those conditions, the make-believe element would diminish in importance. And that is precisely what we find. Stevenson's little *campeador* skirmishing valiantly with the coal-scuttle is at the

¹ Compare what we have said about the routine-tendency (p. 62).

² This observation has a close bearing on the current dispute between the orthodox Froebelians and the followers of Dr. Montessori with regard to the educational value of play. The controversy follows largely from the fact that both sides tacitly assume making-believe to be an essential feature of play (as distinguished from games). The Froebelians, believing that play has great educational value, encourage the child to make-believe because they think he cannot play without doing so. The Montessorians, who regard making-believe as frivolous and a form of untruth, are driven for the same reason to dispute the educational value of play. From the standpoint taken in the text, Froebelian practice errs where it introduces making-believe gratuitously, that is, where the child's spontaneity does not need its aid, and the Montessorians err in refusing that aid where it would serve to widen the child's range of serious interests and achievements.

first level of the process. The nursery-world yields none of the conditions his heroic impulses demand; so fancy must translate it into a stage suitably set for knight-errantry. Don Quixote, a grown-up child, could satisfy like impulses with a less extensive transformation of reality. His arms and accoutrements were real and Rozinante was genuine horse-flesh; but fancy had to turn the windmills into giants. Thus the don's famous deeds typify a stage in which spontaneity, though it cannot dispense with making-believe, has yet captured at least some of the real conditions for the activity it has chosen. The same stage is illustrated by a young friend of the author, who having recently been photographed, thirsted to be himself a photographer. A cardboard box and a magnifying glass were easily fashioned into a camera, and, casting a shawl over his head, the boy performed with exact verisimilitude the process of focusing the picture on the screen. Then came the crux. He knew that the image must be received on a sensitive plate and developed by chemical action. Unhappily he had neither plate nor developer nor any hope of obtaining them. It was here that the power of making-believe—the fairy godmother who turned Cinderella's rags into jewelled splendour and the six mice into prancing steeds—came to his aid. The only fluid, recognizably "chemical," upon which he could lay his hands was vinegar; but why should not vinegar do? So with scrupulous care he took the "plate" into a dark cupboard, solemnly washed it with vinegar, and persuaded himself that the lines of his picture, faint but unmistakable, were actually fixed upon the surface.

Only childhood enjoys the privilege of fulfilling its impulses by this high-handed treatment of inconvenient facts. As the shades of the prison house of reality close round the growing boy his ideas are forced into ever-increasing congruence with the external world; instead of controlling they become themselves controlled. Nevertheless, the power of making-believe remains, and may still perform an essential function

in securing freedom for the development of spontaneity. We owe by far the most impressive example of this truth to the psychological insight and happy invention of the founder of the Boy Scout movement. The basal assumptions of the scout organization are pure make-believe; the scout's picturesque costume, his "patrol-animal" or totem, his secret signs, his "spooring," all belong to a realm of facts and ideas queerly incongruent with the humdrum actuality of civilized life. Yet the geography, geometry, and nature-lore that he learns as a scout are genuine science; the moral lessons he receives are not only entirely serious but have a strong and abiding influence upon his character; and it is from the atmosphere of making-believe that he draws the intellectual and spiritual vigour which make what he thus learns often far more valuable than anything he acquires from his teachers at school. It is not surprising that, impressed by this fact, a number of headmasters and headmistresses of secondary schools have boldly converted their junior forms into patrols of boy scouts or girl guides.¹ Their experience should throw valuable light upon the question whether the movement can retain its energizing power within the school walls and over the whole range of the curriculum.

An interesting and important question is raised when we ask what is the natural sequel to the boy scout stage in education. The problem is to determine the form the fantasy-element should take as the youth's ideas reach still closer congruence with the actual conditions of adult life. In the opinion of many, the cadet corps is the natural successor to the scout troop. Without entering into the merits of this proposal, which raises issues too serious to be dealt with briefly, we may yet contend that military training is too narrow in its scope and aims to represent adequately what scout training does for the boy from twelve to fifteen years of age. The need is rather for sodalities on a basis wide enough

¹ See Ernest Young's article, "Scouting—Its Educational Value," in the Report of the Conference on New Ideals in Education for 1916.

to capture and develop all the new interests of adolescence. A summer camp, or something equivalent thereto, would probably be an essential feature in the activity of such organizations. Camp life would replace the imaginative basis of the boy scout stage with something demanding less making-believe, yet capable of stimulating in a similar way physical, social and moral culture; for instance, it could be used to preserve as a permanent element in education the tradition of national service established by the vacation work of public schoolboys and college girls during the Great War. In the winter months the natural aims of the associations would be to guide the play-impulses of their members into the channels of art—to encourage expression in music, the drama, craftsmanship, and the like—and to foster interest in matters of practical citizenship.

Sodalities with some such aims as these will be, it may be urged, well-nigh indispensable adjuncts to the new continuation schools, and should in some form be represented in or in connection with every school for older boys and girls. Their activities would not, however, exhaust the range of impulses subject to the play-tendency; there remains the whole field covered by school learning in the narrower sense of the term.

No candid observer can doubt that school teaching would be immensely more efficient if teachers could learn to exploit the intellectual energy released so abundantly in play. Sad witness to this truth is borne by the long list of writers, discoverers and men of action who have accused their school education of being useless, sometimes even hostile, to their development. And these men, whose intellectual force was great enough to bring their play-dreams to maturity, are only island-peaks standing out from a submerged continent of ability. School instruction, narrow, unimaginative and over-formalized, was too often the direct cause of the submergence. It is not extravagant to say that if such losses are to be avoided

teaching methods must aim deliberately at feeding the impulse to intellectual play. This does not mean that intellectual dissipation is to be encouraged or even tolerated, but that the child's impulses to "experiment with life" should be taken as our guide in teaching him. Following up Karl Groos's hint, we should take the child seriously, as he takes himself, as poet or dramatist, engineer, surveyor, chemist, astronomer, sailor, and should help him to explore as fully as he craves those concrete modes of self-assertion. We have seen that the boy scout training succeeds on its intellectual side precisely because it follows this policy; what is needed is in effect an extension of the same policy throughout the curriculum and, with due modification in method, throughout the school period.

The immediate question is, then, what form that policy should take as the social outlook of the youth succeeds to the individualism of the child and the age for overt making-believe is left behind. Our answer is that the pupil's studies should be so shaped as to help him to be, in imagination and in anticipation, a sharer in those phases of human effort which have most significance for civilization as a whole. His history and geography should look largely towards politics (in the wider sense) and economics; his science should make him a fellow-worker with men like Pasteur and the chemists and physicists who have transformed the material conditions of life; his mathematics should teach him the value of abstract thought in relation to the practical affairs of life, including the mechanism of commerce and the financial machinery of civic and national government. For teaching given in the spirit thus indicated makes as direct an appeal to the play-motive in the adolescent as the invitation to make-believe does to the child.

Lastly, the same general argument gives powerful support to those who hold that the natural terminus of education is a training shaped to fit the young man or woman for some

specific rôle in the great play of life. Here—in “vocational education”—the imagination which roamed earlier over the whole field of human endeavour is centred upon a chosen plot. Interest comes to close grips with the details of actuality, and making-believe is present only in so far as the student antedates in imagination his entrance into the calling of his choice.

The reader may suppose that, having traced the make-believe element from its riotous beginnings in childhood to its sober appearance in vocational studies, we have fully explored its function in sustaining and facilitating spontaneity. The grown man and woman, he may say, have to face the bare facts of the world and wrestle with them without the magic aid of fancy. Fortunately, nature is not so unkind as that. She does not withdraw altogether from the adult the power of making-believe with which she protected his tender years. A happy blindness of men to present reality has saved many a good cause in times of trouble, has preserved many a charming way of life, and prevented many a schemer for the world's good from abandoning his labours in despair.¹ And while it is often good for us to see ourselves as we really are, it may often be still better, both for ourselves and for others, that we are able to ignore our actual weakness and pettiness, and to take a make-believe self as the basis of our plans and actions. So subtle and pervasive, as we have said, is the spirit of play.

NOTES ON BOOKS, ETC.

The foregoing chapter is an expansion of an article contributed to the *Educational Times* of November, 1912. For further references see the Notes at the end of Ch. VIII.

¹ A literary instance is Dr. Stockmann in Ibsen's play, *An Enemy of the People*. The character is said by the critics to “depict Ibsen's own position towards his countrymen in the matter of *Ghosts*.”

CHAPTER VIII

THE "PLAY-WAY" IN EDUCATION

It is hardly extravagant to say that in the understanding of play lies the key to most of the practical problems of education; for play, taken in the narrower sense as a phenomenon belonging especially to childhood, shows the creative impulses in their clearest, most vigorous and most typical form. Hence it is that essentially creative activities, such as art and craftsmanship, and, in a smaller measure, geographical exploration and scientific discovery, are felt to have a peculiar affinity with play and are, in fact, continuous with it in the development of individuality. Even recreative play and relaxation are misunderstood if viewed merely as attempts to escape from the burden and grind of real life. Whether the player be child or man, they express the eternal craving of the organism for free self-assertion—a craving that must somehow be fed or the soul would die. All truly effective reform, both in education and society, is motivated by the desire to enlarge as much as possible the field in which that central function of life may find worthy and satisfying exercise. Its ideal, whether held consciously or unconsciously, is always that of the mad priest, in *John Bull's Other Island*, who dreamed of "a commonwealth in which work is play and play is life: three in one and one in three."¹

The reader will readily see that this ideal is included in our concept of individuality as the aim of education. It is no

¹ Quoted by Professor A. N. Whitehead, who commends it as, in particular, "the ideal of technical education." See his "Organization of Thought" (Williams and Norgate, 1917), p. 30.

novelty in pedagogical thought—the theory of Rousseau and the practice of Froebel suffice to prove that—but it is at the present day affecting as never before the trend of educational progress. Among the movements inspired by it more or less directly, the one connected with the name of Dr. Maria Montessori has attracted, not undeservedly, world-wide attention. There is probably in the Montessori “system,” as in all its predecessors, much that has only secondary importance and only temporary significance—possibly much that will not justify itself before the bar of experience. But these things can hardly be true of the cardinal feature of her teaching: her courageous and resolute attempt to throw upon the child as completely as possible the responsibility for his own education, and to reduce external interference with his development to a minimum. Man being a social animal, Dr. Montessori provides that her children shall learn how to live with others, to co-operate with them in work and play, to acquire social and personal graces. But the most characteristic part of her scheme consists in the devices—largely taking the form of “didactic apparatus”—by which they are led to teach themselves what infancy and childhood should learn; such as the skilled use of their powers of movement and sensory discrimination, and the elementary arts of reading, writing and number. Left to themselves, under the supervision of the teacher or “directrice,” to go their own way at their own time, to choose their own tasks and to be their own critics, the little students acquire, it is claimed, a high degree of initiative, self-reliance and power of concentration; they learn self-respect at the same time as respect for others, and develop a habit of serious, purposeful industry rarely shown by children driven abreast along the road of progress in accordance with the traditional method of class-instruction.

There is no reason to doubt the justice of these claims. Indeed the most cautious observer, if he could pass from a class of children recently released from the bondage of the

older method to one that has learnt to use the new freedom, and could compare the noisy restlessness and aimless disorder of the former with the calm and happy self-guided industry of the latter, would find it hard to remain a sceptic. Moreover, there is good evidence, not only that children are often under these conditions much severer taskmasters to themselves than their teachers would dare to be, but also that, in subjects capable of objective examination, such as arithmetic, reading, and composition, they reach standards at least as high as, and generally higher than, those commonly expected of their age.¹

Although Dr. Montessori repudiates make-believe play, together with its literary reflection, the fairy story, the essence of her practice may, nevertheless, be described as the play-principle erected into a universal method for the education of young children. Methods of a similar character, though much less thorough-going and more limited in scope, have for years been applied to the teaching of older pupils in this country and in America. The best known is the "heuristic method" of teaching science which, some twenty years ago, became in the hands of Professor H. E. Armstrong a practicable instrument of instruction and, largely as the result of his advocacy, affected powerfully the teaching first of chemistry and physics and later of other subjects. Since the professed object of the method is to place the student as completely as may be in the position of an original investigator, wrestling for knowledge as the man of science wrestles, it is clearly in principle a play-method. Dr. M. W. Keatinge, though a severe critic of heurism and of the general idea of freedom in education, has yet made valuable contributions to the same cause in connection with the use of original documents in teaching history.² The use of the "dramatic method" in teaching history,

¹ See the results given by Dr. C. W. Kimmins in his article "Some Recent Montessori Experiments in England" in the Report of the Conference on New Ideals in Education for 1915.

² See his "Studies in the Teaching of History" (Black, 1910, pp. 123-25). The criticisms referred to are in his "Suggestion in Education" (Black, 1907) and "Studies in Education" (Black, 1916), ch. vii.

geography, English literature, and foreign languages, is a still more obvious application of the play-principle.¹

It may be taken that more recent efforts of the same kind have generally been influenced by Dr. Montessori as well as by the heuristic movement; for besides exploiting to the utmost the spontaneity of the individual, they require the teacher to renounce his authoritarian position, and to be contented to be an "observer," or simply an elder companion of his pupils. This is true, for instance, of the methods described by Mr. Norman McMunn for "teaching through partnership." It is conspicuously true of the methods of teaching the English language and literature recently described with much vivacity and in full detail by Mr. Caldwell Cook, who shows his clear appreciation of the psychological sanction of his procedure by calling his book "The Play-Way."

These writers are only prominent members of a rapidly growing company of pioneers who are all busily engaged in exploring the "play-way" of teaching the several subjects of the curriculum. In contrast with their experiments, which are concerned primarily with procedure in instruction, we must now note another series of essays in revolutionary pedagogy, whose significance is rather in relation to school government and discipline. Here the chief centre of inspiration, at least for this country, has been Mr. Homer Lane's "Little Commonwealth," which was, in turn, a derivative from an American institution widely known as the "George Junior Republic." The original citizens of the Little Commonwealth were, like their trans-Atlantic prototypes, young delinquents, boys and girls of fourteen years and upwards, who were handed over to Mr. Lane, under the terms of the Children Act (1908), by a discerning and courageous magistrate. It is, however, instructive to observe that the community, as it grew, came to contain a number of children,

¹ See Edmond Holmes, "What Is and What Might Be," p. 174. Mr. Holmes notes that "Work while you play and play while you work" seems to have been the maxim of his model teacher "Egeria."

of tender years and innocent of crime, whose presence was valued as an important factor in the remedial influence of the institution. The prime feature of Mr. Lane's policy was one that struck every newly enrolled member of the Commonwealth with extreme astonishment—namely, that the citizens were subject to no discipline or government which was not of their own making and administered entirely by themselves. They regulated their affairs with all the freedom and self-responsibility of a fully emancipated democracy.

The argument that led up to this startling inversion of the usual methods of the "reformatory school" is clear and simple. In Mr. Lane's view, juvenile criminality is due not to a perverted nature but to the misdirection of strong impulses which, deprived of their normal outlet, are driven to seek satisfaction in irregular and anti-social conduct. The remedy sanctioned by psychology is not further repression, relentless and overwhelming, but "sublimation"; and this is the remedy the Little Commonwealth sought to supply. The young incorrigible, the despair of his parents and teachers, perhaps the terror of a London slum, found himself on a farm in Dorsetshire among busy young people engaged in occupations that tempt initiative and give scope to abounding energy. If he chose to share their labours he could earn the wages of independence; if he declined to work he must live on the humiliating charity of boys and girls of his own age and class, and admit the justice of their contempt. There was little fun in rebellion against the law, where there was no authority except the common will of those who might in former days have been members of his own 'gang.' It should not be surprising that, in these circumstances, the inveterate truant and idler was often transformed into an industrious agriculturist, the young outlaw into a convinced supporter of a social order he helped to make.

If freedom and self-responsibility have power thus to regenerate characters warped by years of misdoing and mis-

handling, why should they not prove equally potent for good in the education of all boys and girls? Responding to the suggestive force of this question, many teachers are testing, with varying degrees of scientific thoroughness, the possibility and value of "self-government" in ordinary schools. The account of one such experiment, given by Mr. J. H. Simpson, is particularly useful, not only by reason of the clearness and candour of his analysis, but also because it shows that the new ideas have power to transform even that formidable thing, the English public school tradition. As Mr. Simpson points out, the so-called self-government of the public schools is far from being democratic in the proper sense of the term. It is rather, he maintains, a compound of the oligarchic rule of the prefects with the tyranny of a custom often stupid and unprogressive simply because the ordinary boy is given no opportunity of exercising his intelligence and initiative in matters of real importance. Moreover, the whole social tone is subtly vitiated by a subconscious opposition between the authority of masters and prefects on the one hand and the rights and interests of the commonalty on the other; whence comes the pernicious idea that the maintenance of law, like the exaction of work, is the business of external powers whose will it is permissible and even a "sporting" thing to frustrate. These evils can hardly be removed unless the law of school and classroom comes to be the expression of a common will to which every boy has an equal right to contribute, and until, correlatively, it is recognized that to make and to administer the law is a duty which no one may shirk, but every one must share in, to the best of his ability.

Mr. Simpson, following the practice in the Little Commonwealth, sought to fulfil these conditions by setting aside certain periods in every week during which his form was resolved into a "court" performing the functions of legislation, administration and justice under its elected officers. The reader must consult his book for an account of the progress

of the experiment and of the difficulties its course encountered. We must set down, however, two conclusions to which his experience seems to point. The first is that it is difficult to combine thorough-going self-government with the present methods of class-instruction; for these belong integrally to the older tradition of school-organization and discipline. Self-government and some form of "play-way" in teaching are necessary correlatives, the former being itself, in fact, the play-way in the region of conduct. The second conclusion is that the larger the share of responsibility we throw on to the pupil the more necessary is it that education, as a way of spending one's time and energies, should be justified in his eyes. Tasks imposed on us by irresistible forces do not need this justification. If they prove congenial, so much the better; if not, we make the best we can of them. In either case we cannot help taking them seriously. But if they are expressions of our own free will, we shall take them seriously only if, like voluntary play, they seem intrinsically "worth while."

In the Little Commonwealth this condition was met by putting the work on a directly economic basis. Mr. Simpson, recognizing the need to which we refer, sought what he calls a quasi-economic basis in an ingenious system of corporate marks. As we might expect, he does not regard this device as finally satisfactory. We must, in fact, agree with him that nothing will really meet the case, short of such changes in the matter and manner of school teaching as will make it unnecessary to offer bribes to industry, and will place the incentive to labour in the labour itself. And such changes must unquestionably be looked for in the directions indicated in the preceding chapter.

Connected with these new departures in education are two large questions we have reserved for separate discussion. The first is the question of school organization; the second concerns the functions of the teacher.

It is manifest that neither a rigid class-system nor a rigid time-table is wholly compatible with the principle that a child should travel through the world of learning in his own way and at his own time. These institutions embody, in fact, the contrary principle; for the assumption underlying them is that a school may be divided into groups of learners each of which can be treated as a unit moving in a single direction at a single rate of progress and transferring its interest from subject to subject in obedience to an external rule. In the case of the large classes still too common in elementary schools, this grotesque assumption has often to be taken quite seriously, for nothing else may be possible. In less trying cases there is room for compromise; classes may be subdivided into sections and rearranged for different subjects; there are "options" and "sides" and "individual attention" for divergents. But although the barbarous simplicity of the scheme may thus be tempered, its basis is still the postulate that it is the teacher's business to prescribe what shall be learnt and how and when it shall be learnt, the pupil's to respond as best he can. The "Montessori school," on the other hand, accepts the full consequences of the principle that the individual pupil is the unit. Life being a social business and the school a miniature society, there must be certain regularities and certain corporate acts. Apart from these, however, there is no fixed time-table and there are no classes; the children go their own way and move freely upon their lawful occasions. In the case of older pupils this method, too, must admit compromise. There are many times when the repetition of necessary instruction would be extremely wasteful, and many when corporate teaching has values of its own which nothing could replace. Moreover, provision must be made for co-operative activities, such as music, gardening, field-work, and hand-work, physical and dramatic exercises. For work of these kinds there must be fixed times, places and organization. But there would remain an un-

mistakable difference between the general tone and functioning of a system of this kind, and those of one built up on the traditional presuppositions. And there is already good evidence that such a system is not only practicable, but is capable of yielding fruits better than those of the older system, even when measured by the older standards.

Lastly, we turn to the teacher. The reader may have found it difficult to see what room is left for a teacher in a scheme of things in which each child is to seek his own individuality and ensue it. And his perplexity may well be deepened when he finds Dr. Montessori insisting that the teacher's one function is to be "an observer" and Mr. Lane disclaiming any pedagogical gift except masterly inactivity. Let him observe, then, in the first place, that however "natural" the conditions of school life may be made, it remains a life lived in a selected environment, an artificial microcosm within the macrocosm, and that the teachers do the selecting. They set the stage and furnish the properties for the play. It follows that even though they claim no share in the composition of the drama, but merely watch its development with friendly interest, they have already settled within certain limits what form the action shall take. Thus, though it is true that in a Montessori school a child may do what he pleases, yet what he may please to do is rigidly and even narrowly limited. He must fit cylinders into their appropriate holes, arrange coloured tablets in due sequence, learn the rudiments of number from the "long stair"; for, as matters are arranged, there is really nothing else he can do. In fact, one of the most striking things about these schools is the uniformity of the routine. Of all the uses to which infantile ingenuity could put the "didactic apparatus," those intended by the inventor are the only ones actually observable. How does this come about? Ultimately, without question, by the will of the teacher, who intends, for instance, that the cylinders shall be used neither as nine-pins nor as soldiers, but solely for cultivating tactile

and visual discrimination. This use, discreetly suggested, spreads by imitation and becomes fixed in the tradition of the school; but behind and safeguarding the tradition there is always the abiding will of the teacher.

It must, further, be understood that, in speaking of the teacher as an observer, Dr. Montessori has in view not a merely passive onlooker, but an active observer—one who “stands by,” in the nautical sense of the term, refraining from fussy interference, but ready to lend a hand when help is called for. She must keep a minute record of each child’s progress and, like a watchful but restrained mother, must look for the moment when a word will be truly in season or a suggestion judicious.

Similarly, the teacher of older pupils will not cease to be a teacher, however resolutely he may abjure the didactic attitude. His functions may change in character, but will be no whit less important, and will make even greater demands upon learning, intelligence and professional cunning. It will be his task to create and maintain an environment in which his pupil’s impulses towards the arts and sciences will be awakened, and to shepherd them unobtrusively in the right directions. Himself steeped in the best traditions of his subject, he must see that, by inspiration, suggestion and criticism, those traditions are revealed to the young inquirer, and are allowed to make their appeal to him. He will be an “idea-carrier” between the great world and the school microcosm, infecting his pupils imperceptibly with germs that may fructify into ideals of sound workmanship and devoted labour. And, as we have already said, organization and corporate instruction, though they lose their present obstructive predominance, must retain their natural place in the school economy. The old pedagogic arts, which represent not merely the blunders of the past but also the successes won during centuries of sincere and patient effort, can never become obsolete. But purged by a surer criticism, they should develop into the better instruments of a more enlightened purpose.

Turning from intellectual to moral education, we must remark that some enthusiasts for the "new freedom" are prone to accept with uncritical readiness the doctrine that children are naturally good, in the sense that if they were left to themselves moral beauty would unfold in their lives, as surely as physical beauty unfolds in the blossoming flower. It is a pleasanter doctrine than the one which declares the heart of man to be deceitful beyond all things and desperately wicked, but, like the latter, is rather the expression of a temperament than the statement of a fact. There is, however, this to be said for Rousseau's position as against Jeremiah's: good ways of life have in them a promise of growth which bad ways may falsely offer but cannot, like the good, fulfil. Good activities may lead to indefinite expansion; evil activities, though for a while they may flourish like the bay-tree, contain in themselves the seeds of their own inevitable decay. Beings, the deepest need of whose nature is creative expansion, must, therefore, on the whole, seek the good and cannot be satisfied unless they find it. But the tragic history of the human conscience, and the sad story of what man has made of man, show how doubtful is the search and how often it ends in disaster. While, then, the unperverted impulses of childhood may have a biological bias towards the good, it is too much to expect them to solve unaided the problems of life which have baffled some of the best-intentioned minds and most highly gifted races of mankind. In short, it is dangerous to ignore either of two complementary truths: the one expressed in Shelley's bitter parody, "Wherever two or three are gathered together, the devil is in the midst of them;" the other, in Mr. G. K. Chesterton's dictum, that to hold that "salvation, like other good things, must not come from outside" is "a blunder about the very nature of life."¹

In the realm of conduct, then, as in the realm of intellect, teaching must always have a definite place and essential

¹ "Short History of England," p. 58.

functions. Taking first the case of young children, it is clear that the teacher's manipulation of the environment is not limited to setting the stage for the child's activities and providing him with fellow-actors. She, with her superior powers and knowledge and her developed personality, is herself a constant and most important element in the environment, and exercises on the growing minds about her an influence that will be none the less decisive because it is brought to bear in the indirect form of suggestion and example rather than by precept and command. From her, if she is worthy of her functions, the children learn in a thousand subtle ways the attitudes and tendencies that distinguish the humane from the brutal, the civilized from the barbaric habit of life. Insensibly but surely her values become their values, her standards their standards; and from her come the influences that direct the children's social impulses into definite forms of kindly action.

Similarly, although the teacher of older boys and girls may resolutely put away the notion, so seductive to adult vanity, that it is his duty to "mould the characters" of his pupils as the potter moulds his clay, yet he cannot bind the directive influences that flow from the prestige of age, of superior knowledge and experience of the world. Even if he could he should certainly not do so. His part is not to be a *roi fainéant*, but rather to be in his little republic a perpetual president, who must exercise the duties of citizenship all the more scrupulously and assiduously by reason of the exceptional powers his position gives him. He cannot help regulating the moral atmosphere of the school or class to a large extent by his influence on the pupils' studies and reading. And though his young people will generally gain outside the school their first acquaintance with the loyalties and aspirations that divide and sway the world, yet it is in school and under his influence that the issues involved in those loyalties and the meaning of those aspirations should become

clear to them, so that they may make their choice with as full a sense of responsibility as their age permits.

Again, it is undoubtedly a sound principle that the power of moral ideas depends, in general, upon their being learnt from first-hand experience, and used as guides to one's own responsible actions. Here, rather than in some metaphysical dogma of natural goodness, is the true sanction for the practice of throwing the onus of school-government upon the governed, and calling upon them not only to create the law but also to deal with offences against it. The principle is so important that, rather than sacrifice it, a teacher may justifiably tolerate much minor evil, waiting patiently for the spontaneous reaction that will generally come when experience reveals its unpleasant fruits. But, in addition to the common rights of school citizenship which the teacher shares with the taught, he has a special responsibility that he cannot repudiate: it is his plain duty to see that the fundamental purposes of school-life are not frustrated by the corrupting influences of a few or the moral weakness of the rest. When danger of this kind threatens, and persuasion fails to "rally the good in the depths" of the social body, he must act and act decisively. There is no inconsistency between this conclusion and the preceding argument, provided that the teacher makes clear that he acts not as an autocrat resuming rights of interference for a while in abeyance, but as the mandatory of a wider society to which he and the offending body alike owe allegiance—the school as an historic entity transcending its present membership, or, in the last resort, the Great Society of which the school is, ultimately, an organ.

The case for self-government in schools is put by some strenuous advocates in a form whose consequences it is important to face clearly. Starting from the sound position that boys and girls can best learn the significance and value of the moral order by building it up for themselves, they proceed to argue that the process, if it is to be genuine, or at least complete,

must start from the beginning. As one of the leaders in the new way has said, it is only when young people have had the "searching experience" of a moral chaos that the craving for something better is powerfully aroused in them. We must accept the evidence which has now been offered from many quarters that the moral activity thus initiated and supported may have the happiest and most striking results upon the character of those who share in it. But we are bound to ask what happens to those who come after them and find the foundations of a decent common life already laid and a fair building already erected upon them. Deprived of the "searching experience" of moral anarchy, will they not also miss the educative experience of fashioning a moral order to replace it? There are uncompromising spirits who do not shrink from what seems to be the inevitable answer. They agree that as soon as a stable rule of life has been established the community has exhausted its usefulness; it must be broken up and a fresh start made for the benefit of the next generation of citizens.

Reformers of a less heroic cast may well shrink from accepting so drastic a deduction from their principles, and will turn back to re-examine the premises from which it follows. They will then observe that their intransigent colleague has eliminated from his educational scheme one element which the world in general holds to be of prime importance—namely, the influence of tradition. The methods used in the upbringing of children have varied widely from age to age, and even from one family or school to another at the same epoch; but from the dawn of civilization the elder generation has conceived its task to be to form the younger generation in the tradition in which itself was formed, modified in such directions as its experience may have suggested to be desirable. Conservative reformers are content to seek improvements in the practice based on this ancient faith; our revolutionaries would have us reject the basis altogether, and build

education anew on some form of the dogma of natural goodness.

No one who has accepted the interpretations of life set out in these pages can be satisfied with such a position. Somehow, he will say, the new, well-founded faith in the child's spontaneity must be made to square with the old, equally well-founded faith in the value of tradition.¹ Our own discussion, based upon the results of the previous chapters, has constantly assumed such a reconciliation to be possible. The psychological grounds for the assumption may become still clearer as we proceed.

NOTES ON BOOKS, ETC.

Dr. MONTESSORI has given a consecutive account of her ideas and their applications in two works, "The Montessori Method" and "The Advanced Montessori Method" (Heinemann). A brief general account of the Little Commonwealth will be found in CLARKE HALL, "The State and the Child" (Headley, 1917). The citations on pp. 94-5 are from J. H. SIMPSON, "An Adventure in Education" (Sidgwick and Jackson, 1917). N. MACMUNN, "A Path to Freedom in the School," records the experience of a still earlier pioneer, and is a persuasive little work, full of sound criticism of the old order. H. CALDWELL COOK, "The Play Way" (Heinemann), is a delightful essay in the "new teaching" of English. For the Caldecott Community see the footnote on p. 75. The Bureau of Educational Experiments (70, Fifth Avenue, New York) has issued several useful pamphlets on the educational value of play. Sir. R. BADEN-POWELL's "Scouting for Boys" and the official Handbooks for Wolf Cubs and Girl Guides are all published by C. A. Pearson, Ltd. The "Order of Woodcraft Chivalry" is a more recent movement, based explicitly upon the recapitulation theory of human development. Its aims and methods are briefly set out by MARGARET A. WESTLAKE, "The Theory of Woodcraft Chivalry" (published by the Order, at 4 Fleet Street, E.C. 4, 1918).

¹ To start afresh from moral chaos may still be necessary as a remedial measure to be adopted in the case of "delinquents" whose minds have been poisoned by a bad tradition. But even in this case the purpose of the moral surgery, properly interpreted, is to establish the conditions under which a better tradition may have its due effects.

CHAPTER IX

NATURE AND NURTURE

THE question just raised has been long and warmly debated in a more general form—namely, as the question whether “nature” or “nurture,” inherited endowment or environmental influence, has the more potent effect in determining a child’s development. Upon this issue there are two schools of extreme opinion. The one, mainly followers of Francis Galton, exalts “nature” so high that “nurture” becomes of almost trivial importance; the other, conveniently called “neo-Herbartian,” maintains almost without qualification the cheerful creed of Helvétius: *Education peut tout*.

The Galtonians support their position by two main lines of argument. In the first place, they say, there is between a child’s physical and moral qualities so high a degree of correlation, that it is impossible to suppose them derived from different sources. Since the former are indubitably the work of “nature,” the latter cannot be produced by “nurture.” Given that Becky Sharp was born with green eyes, we must admit¹ that the rest of her deplorable career followed almost as a matter of course.

In the second place, they point to the stubborn facts of heredity. Galton presented some of these in a particularly arresting form in his nightmare histories of twins who behaved throughout their lives as if they were clockwork automata turned out by the same factory and wound up at

¹ As Professor Karl Pearson has somewhere said.

the same moment. The disquieting inference from these chronicles is that we are all driven upon life's course by the fatal *vis a tergo* of our endowment, although, owing to the merciful infrequency of twins, most of us are able to dwell in a fool's paradise where the depressing fact may be ignored. The biometricians have used their statistics ruthlessly to drive home the same idea, showing that a man's character is correlated with his ancestor's as fatally as his stature or his cephalic index. And, finally, eugenic research has rooted out the appalling history of the Jukes family,¹ to clinch the proof that the circumstances of life are to man what rocks and winds and currents are to a ship: merely accidents that make his qualities manifest but have nothing whatever to do with producing them.

Unmoved by the weight of scientific authority behind these arguments, Dr. F. H. Hayward, the protagonist of the neo-Herbartians, declares boldly that psychical heredity is a "spectre" which vanishes as soon as one penetrates beyond statistical abstractions to the concrete facts of life. It is no longer possible, he admits, to maintain the pure Herbartian doctrine that the soul consists in nothing but acquired ideas; it possesses, without doubt, specific inherited tendencies. But these tendencies are so plastic that "nurture" can make almost anything of them. To be convinced of this we need only examine the records of such an institution as the Barnardo Homes. For these prove that from the most unpromising stock, when it is properly manipulated, human material as sound and good as any other may be fashioned.

The opposition between these views is unmistakable, and the reader may well think them as completely contrary as two theories of the same facts can be. It may seem to him,

¹ Out of about 1,000 persons in five generations, 300 died in infancy; 310 spent 2,300 years in almshouses; 440 were wrecked by disease; 130 were convicted criminals (including 7 murderers); and only 20 learned a trade! See Keatinge, "Studies in Education," p. 27.

therefore, perverse to suggest that their unity is, after all, more fundamental than their difference, and that the quarrel between them is so virulent just because it is a domestic quarrel between members of the same family. Yet consideration will show that this view is correct. At bottom the Galtonian and Herbartian views are both variants of the mechanistic conception of life. According to the former, if we provide a child with a happily selected ancestry it makes comparatively little difference how we educate him; according to the latter, if we educate him properly his ancestry is of negligible importance. This contradiction is so striking that it obscures the fact that the Galtonians hold that the child's being is determined irrevocably by nature no more firmly than the Herbartians hold that it is fatally moulded by nurture. Upon either view we must admit that the potter has power over the clay to make one vessel unto honour and another unto dishonour. The only alternatives left open are that if we follow Galton we shall identify the potter with the blind forces of heredity, working pre-natally, while if we prefer Herbart we shall discern the potter's work in the post-natal influences of home and school.

In distinction from both these views our doctrine asserts that the living organism has a principle of autonomy, of self-determination, which does not, indeed, make it independent of endowment and environment, but does enable it to give its own characteristic form to, and make its own original use of, what it derives from those sources. We have, then, no difficulty in admitting both that the fertilized cell with which the life of the individual begins contains engrams whose unfolding is manifested in its spiritual equally with its physical growth, and also that the organism is so much one with its physical and spiritual environment that the two cannot be separated. For the fundamental truth is, for us, that it is a centre of creative energy which uses endowment and environment as its medium; so that the elements

it receives from nature and nurture do not themselves make it what it is, except in so far as they are the bases of the free activity which is the essential fact of its existence.

Considering, however, the rival doctrines on their merits, it seems clear that the Galtonian view underestimates the importance of "social heredity," and so tends towards a pessimistic view of the possibilities of average humanity. Medical psychologists, and other observers whose work brought them into intimate contact with the minds of private soldiers during the great war, were often struck by the immense amount of talent which an unenlightened education and a depressing social system have conspired to inhibit (see p. 86). And there is good evidence that what is certainly true of our own people is also true of many of the "backward peoples." For instance, from the fact that the Murray Islanders had no words for counting beyond six and could refer to larger numbers only in the vaguest way, it seemed a fair inference that their nature lacked the conditions of mathematical ability. Yet under the ministrations of a Scottish dominie their children are said to have developed a virtuosity in arithmetic that would have delighted any school inspector of the old regime. And as these words are written, comes the striking message of Sir Hugh Clifford to the Gold Coast Colony, from which one gathers that a most unpromising race is proving itself capable of developing, under wise guidance, administrative gifts and industrial aptitudes commonly thought to be confined to the higher peoples.

On the other hand, the too easy optimism of the neo-Herbartians leads them to underestimate the differences in general and specific capacity that limit the possibilities of individuals with adamantine rigour. Inspired by a worthy but rather crude belief in the "power of ideas," they think of the soul as an artefact that may be fashioned, by a sufficiently skilful treatment, in accordance with almost any pre-

conceived plan. Writers of this school are, therefore, only consistent in treating with marked coolness the idea that to cultivate individuality is the proper aim of education.¹ Their attitude, which minimizes the influence of native capacity, would, if translated into practice, lead to much educational waste. Dr. Keatinge illustrates this point by an extreme but apposite case: "The influence in a school of a good musical teacher upon a number of only moderately gifted pupils will, in succeeding generations, prove to be almost negligible from every standpoint in comparison with the influence upon the society of their time, of a family of, say, four or five musical children, who have been brought up in musical surroundings, have drunk in traditions of music with every pore, and go forth into the world ready to promote musical interests, and in turn to found families in which this particular art will be cultivated with zeal."²

Accepting, as we must, the position that variations in native capacity cannot be ignored, we must next inquire what forms they take and how they can be estimated. Here we enter upon one of the most important chapters of recent psychology. The first episode centres round the attempt of the late Alfred Binet to determine a "metric scale of intelligence." The starting-point of his researches was a problem of painful interest to administrators in most great cities—namely, to

¹ There is, we may remark, some risk of confounding two things which may be distinguished as social and individual education. No one can question that persistent educational pressure may alter the whole intellectual and spiritual orientation of a people. The modern transformation of Japan is usually quoted as the leading case, though Mr. Benjamin Kidd may be right in declaring the "Prussianization of Germany"—effected in a generation very largely by the influence of the schools—to be the most important instance. Kidd may also be right in maintaining that if the schools worked together in the proper direction they might, in twenty-five years, purge Europe of some of the worst evils that have desolated its history. But this permeation of a society by certain ideas, although enormously important, is but the beginning of education as we conceive it; for it is, after all, only the provision of an environment. The arguments in favour of leaving the individual to make his own use of the environment come subsequently into play, and still retain all their force.

² "Studies in Education," p. 43.

determine whether the backwardness that so often makes it impossible for a child to keep pace with others of the same age is, in a given case, due to mental defect or merely to unfavourable conditions, such as constant removal from school to school. Binet began with the hypothesis that every child has a definite fund of native capacity or intelligence that would carry him, even if he received no teaching, a certain distance forward during each of the formative years of life. There is, for example, a time in the life of each child at which he has "picked up" the facts that he has eyes, ears and a nose; a time when he knows the names and order of the days of the week; a time when he can carry in his head instructions of a certain complexity; a time when he can disentangle the right conclusion from the data of a certain kind of argument, and can see through a certain kind of fallacy; and so on. The psychologist sought, by examining a large number of young Parisians, to determine which of such non-scholastic accomplishments belong, on the average, to the several years of childhood. The list, once compiled, was to serve as a metric scale for fixing the "mental age" of any child to whom it was applied. Thus, if a child, born ten years ago, could just pass the tests of the tenth group, his "mental" would be deemed identical with his "chronological" age; if he failed to deal with those beyond the eighth group, his mental age would be judged to be eight—*i.e.*, two years behind his chronological age. It remained only to decide what degree of retardation of the mental behind the chronological age made it impracticable to teach a child together with his coevals, and warranted his removal to a special school. Binet ultimately adopted as his criterion a retardation of three years.

It is impossible to follow here the development of this interesting enterprise of the "new psychology." Binet's scheme offered several openings for criticisms: for example, (i.) the allocation of tests to the different years, which, being

based on the achievements of the Paris *gamin*, were hardly likely to be paralleled exactly by those of his representatives in other cultures and climes; (ii.) the mode of deciding the mental age of a child who fails in some of the tests of a given year yet passes in others assigned to a later year; (iii.) the estimation of mental defect. On the first point, the tendency has been to drop the tests of knowledge and rely on the tests of faculty¹ which have a wider validity. As regards (ii.), the present tendency is to assign "points" or marks to the tests, and to fix the mental age in terms of the sum-total obtained by the candidate. In the estimation of backwardness the greatest improvement has been made by Mr. Cyril Burt, whose contributions to the subject of mental tests have great value. Burt found, by the examination of a large number of London school-children, that the "standard deviation" of the mental age is always normally about one-tenth of the chronological age, while, in the case of mentally deficient children, it is about four and a half times as great. He proposes, therefore, to use the standard deviation as the unit in measuring divergencies above or below the normal.²

¹ The power to count backwards is, for those who have not practised the exercise, a simple test of faculty. Another is to deal with such questions as the following (which the author has borrowed from Dr. P. B. Ballard): "Captain Cook made three voyages round the world. In one of his voyages he was killed and eaten by savages. In which voyage did that happen?" Such tests demand, of course, a certain minimum of knowledge, but the essential requirement is a synthetic power in which minds of low development will be defective.

² There are two ways of measuring the variation in mental age among the children of a group who have the same chronological age. One is to take the several differences between the mental ages and the common chronological age, to add them together, and to divide by the number of children. The number thus obtained is called the "mean deviation" of the mental ages of the group. The other way is to *square* the differences, to add the squares, to divide the sum by the number of children, and to take the square root of the quotient. This gives the "root-mean-square" or "standard" deviation. The former method is arithmetically simpler, but the latter is, for technical reasons, generally to be preferred.

The reader may note in passing that Burt's interesting discovery contradicts the view, cherished by many teachers and sometimes preached by

Binet and his followers have generally assumed, explicitly or implicitly, that they were dealing in their tests with a single kind of native capacity, "general intelligence" or "educational ability," which may show itself most prominently in different directions in different children, but is essentially one thing in all its various manifestations. The second phase in the history of our topic consists of the researches whose express purpose has been to test that assumption.

Professor C. Spearman, whose work upon this problem is of outstanding importance, has classified the competing views on the nature of intellectual ability into "non-focal," "multi-focal," and "uni-focal." Upon the non-focal view—of which Professor Thorndike was once the leading representative—a man's mind is a bundle of numerous and totally unrelated capacities. That means that from a man's ability to do one kind of thing well one can draw no inference about his ability to do another kind of thing; one must simply wait and see. The multi-focal view, to which Thorndike has now transferred his allegiance, holds that our abilities fall into a small number of groups. If it were true, we could infer from a man's ability to do one thing well that he could also do a certain number of other things well, but could make no inference with regard to performance beyond the purview of the group to which these belong. The common idea that a person may be clever at languages, and yet have no head for mathematics, is a popular rendering of this view. According to the uni-focal theory, *all* forms of intellectual ability are related; there is a common element running through them, in virtue of which inference from one to another is always possible. This is clearly the assumption involved in the practice of choosing public officials

inspectors, that the result of good teaching should be to minimize the differences between the more and the less able members of a class; for it shows that divergence in ability produces, as indeed one might expect, a difference which is proportional to the length of time it has been acting. One has here another argument for treating the individual as the unit of instruction.

by competitive examination in "general" or "academic" subjects. Needing young men of sufficient ability to administer the Indian Empire or the home service, we select those who, under the conditions of the examination-room, turn out the best set of Greek verses or solve the greatest number of differential equations, and send them to the East or to Whitehall, confident that those who have shown the highest ability in the one direction will prove to be most able also in the other. The same belief is the keystone of Carlyle's argument in the "Heroes."

Spearman himself holds the third view, and has defended it with great ability in a series of highly important memoirs. His methods are too technical for these pages, but the general nature of the argument may be understood from the following explanation.

Let us suppose a very large group of persons to be tested and to receive marks for ability in a number of directions that have no obvious connection with one another. (The ability to add up figures rapidly, and the ability to tell which of two notes has the higher pitch, would be examples fulfilling this condition.) Suppose further that the marks are so assigned that performances of equal merit in the several tests always receive the same marks, and that the mean mark given is 50 per cent. Then three results are *a priori* possible. (i.) The faculties involved in the several tests may, though they look very different, be really the same. In that case, apart from accident, a person's marks in all the tests would be the same; if he earned, say 80 or 10 per cent. in the first, he would earn 80 or 10 per cent. in all. (ii.) The faculties may be as different as they appear. In that case there will be no congruity between the positions of the same person in the different tests. It follows that if we select from the whole group those who earn more than 50 per cent. in the first test, their *average* mark in any other test will be exactly 50; for their superior ability as a body is confined to the first test, and

implies neither superiority nor inferiority in another. (iii.) The situation may be intermediate between these extremes. A person's skill in the several tests may depend in part upon a common faculty which is brought into play in every performance, and in part upon specific faculties that come into action in one only. In that case, the results will depend upon the relative importance of the common and the specific faculties in a given test. Let us suppose that in the first test a person's position depends chiefly upon the amount he possesses of the common faculty. Then the persons who gain more than 50 marks in the first test will have in any other test an average mark above 50. For however important the specific faculty may be that comes into play in the second test, those persons will, as a body, have an average amount of it, while they more than have an average amount of the common faculty.

By an elaborate application of this kind of reasoning, Professor Spearman claims that he has placed beyond doubt the truth of the unifocal theory—that is, that there is running through all forms of intellectual ability a “central intellective factor” which is everywhere one and the same, although it is combined in action with different local factors that are specific to the several forms of ability. It must, however, be said that the validity of the reasoning has, quite recently, been acutely questioned by Dr. Godfrey Thomson, who, while neither denying nor affirming the unifocal theory, maintains that it is not established by the experimental facts upon which Spearman relies.

At the present moment, then, that theory must be regarded as still *sub judice*. It may well be that, as so often happens in the history of science, the simple idea it presents may have to be qualified. Meanwhile, its substantial truth seems constantly to be confirmed by results which are not easily interpreted on any other basis. By far the most striking are the results of the “mental tests” applied during the Great

War to about a million and a half recruits in the American Army. The object of the tests was to select promptly the men whose superior mental powers marked them out for employment in special posts or specially important organizations, to eliminate those whose inferiority would make them a hindrance or a danger to their fellows, and to make it possible to equalize the mental strength of units, such as infantry companies, which were intended to work together. Each recruit was required to answer, by underlining, crossing out or checking, a paper of 212 questions. The process took only fifty minutes, and could be applied at one time to groups as large as 500.¹

The verdicts of the mental tests were compared in some thousands of instances with the judgments of officers who had the same men under observation under conditions specially favourable for assessing their military value. The results of the comparison are most impressive; for they show that in a great majority of cases the predictions of the psychologist, based upon a fifty minutes' test, were fully confirmed by the subsequent behaviour of the men in the vastly different circumstances of the camp and the training school.

This large-scale experiment cannot fail to stimulate other attempts to use mental tests for the rapid discrimination of ability. They have for some years been employed, here and there in this country, as an ancillary means of selecting scholars for promotion at public expense to secondary schools. More recently they have been used with typical Teutonic

¹ In addition to simple arithmetical problems and exercises in checking opposites (*e.g.*, lax—strict, assert—maintain) the questions tested the power to discriminate good reasons from bad (*e.g.*, leather is used for shoes because (i.) it is produced in all countries, (ii.) it wears well, (iii.) it is an animal product), and the power to carry out instructions under more or less complicated conditions (*e.g.*, “If 5 is more than 3, cross out the number 4 in the given row of figures unless 4 is more than 6, in which case draw a line *under* the number 5”).

Illiterates and foreigners took tests in which the instructions were conveyed by pantomime and demonstration. Those who failed were examined individually by tests of the Binet type.

thoroughness and rigour to pick out boys capable of profiting by an "intensive course" at a school for higher talents in Berlin. And it is now understood that the authorities of Columbia University, recognizing that success in a pass examination of the academic type is an inadequate guarantee of the ability needed to make good use of a higher education, will henceforward require their candidates to submit to mental tests before matriculation.

Scarcely less significant are the numerous attempts now being made to discriminate individual ability for work involving a definite group of specific factors. It is understood that these "vocational tests" have been used in the British Army in the selection of air-pilots, and they are rapidly finding their way into the world of industry, particularly in America. An interesting, though rather complicated, example is offered by the ingenious procedure devised by Hugo Münsterberg of Harvard for selecting men whose psychological make-up fitted them for employment as drivers of electric street-cars. The candidate was required to turn a crank so as to cause a narrow window to run along a card, which was to be taken as representing a street. The card was marked out in half-inch squares and was ruled with a couple of heavy lines, half an inch apart, to represent rails. Certain squares were occupied by figures: 1 standing for a pedestrian, 2 for a horse-vehicle, 3 for an automobile. Differences of colour indicated whether the occupant of a square was to be taken as moving parallel to or across the track, and there were conventions with regard to the speed—a horse being supposed to travel twice, an automobile three times, as fast as a pedestrian. The point of the test was to discover whether, as the movement of the window brought the figures rapidly into view, the man could react promptly to their significance—stopping the crank in good time when the position, value and colour of a figure indicated an imminent collision, turning on serenely when, in accordance with the conventions, there

was no danger. Experienced motor-men reported that the test demanded the same kind of adjustments of attention, and the same readiness of discrimination as actual driving in a crowded street, and stirred up the same tendencies to hesitation and fluster. Moreover, Münsterberg found that a classification of the motor-men on the basis of their success in the test agreed well with the classification furnished by the railway company. Thus it would appear that the test was really capable of distinguishing those who had in them the makings of good motor-men from those who were predestined to failure, through lack of the requisite psychological equipment.

It is evident that there should be important scope in the field of education for both general ability tests and vocational tests. It may, however, be asked whether the antithesis between them is theoretically sound; that is, whether vocational fitness does not largely depend on the presence of other elements—for instance, moral elements—that are just as general in their functions as Spearman's central intellective factor. The psychologists have not missed that question. For example, Dr. E. Webb, a pupil of Professor Spearman, has inquired what psychological factors in a man, as distinguished from the actual qualities, good or bad, of his actions, determine the judgments which others pass upon his character. For this purpose, he obtained a number of assessments of the mental qualities of about 200 training college students. The assessors were mainly fellow-students holding responsible positions in the social body, and their judgments were given under thirty-nine heads, ranging from emotional qualities, such as tendencies to cheerfulness or anger, to intellectual qualities, such as common-sense and originality. From a statistical analysis of the results, conducted as in Spearman's researches, Webb concluded (i.) that judgments of character rest on a basis independent of the central intellective factor (*g*), and (ii.) that this basis is, or includes a second

central factor (w) which may be shortly described as "the persistence of motives."

Quite recently Mr. J. C. Maxwell Garnett, working over the same data, has brought to light a third independent factor which is closely related to humour and originality, and is called by its investigator "cleverness" (c). As he points out in his brilliant but recondite paper, high values of c distinguish the artists and poets and other men of genius from the scientific journeymen and plodding philosophers whose achievements presuppose only a high value of g . And he makes the ingenious suggestion that the general nature of a person's endowment may be registered by a single point in a tri-dimensional record or graph, the co-ordinates of the point being the values of the three independent factors described by Spearman, Webb and himself.

These fascinating researches are in a field that admittedly needs further exploration. It is, however, tempting to think that the factors g , c and w may be fundamental characters of all hormic activity, unconscious and conscious. Their values, symbolized by Mr. Garnett's graphic point, would be in a special sense diagnostic of the promise and potency of the individual, so far as these depend on his endowment. They would have a much deeper significance than any specific factors, though the latter have, too, a bearing, as yet imperfectly realized, on human efficiency and happiness.

If these speculations should prove to be well-founded, the importance of good teaching will be not a whit diminished. On the contrary, improvement in the assessment and classification of abilities should be a challenge to improvement in the types of training provided to develop their possibilities. Moreover, the abilities brought to light by psychological tests are, as a rule, only abstract in character; the tests do not tell us what a child will aspire to do or to be, but only predict certain formal features of his activity. What he will aspire to do and be is determined, subject to the principle of

autonomy which is the ultimate arbiter, by other natural tendencies of a more concrete nature. One of these is the general tendency to *imitation*, which we shall at once proceed to study. The other is the tendency to follow certain specific lines of activity—a tendency which we shall subsequently consider under the heading of *instinct*.

NOTES ON BOOKS, ETC.

M. W. KEATINGE, "Studies in Education," chaps. ii, iii. (Black, 1916), contains a useful discussion of the influence of "nature," friendly to the Galtonian view. The view is put forth, in an uncompromising form, in C. GORING, "The English Convict" (published, with a Preface by Karl PEARSON, by H.M. Stationery Office, 1919). The opposite side is most vigorously championed in F. H. HAYWARD, "Education and the Heredity Spectre" (Watts, 1908). B. KIDD, "The Science of Power" (Methuen, 1918) is an eloquent but somewhat unscientific plea for the same view. A convenient summary of the literature of mental tests is given in R. R. RUSK, "Experimental Education" (Longmans, new ed. 1919); G. M. WHIPPLE, "Manual of Mental and Physical Tests" (Warwick and York, 1910) is the standard technical treatise on the subject. H. BINET's pioneer work is most conveniently studied in his book, "Les Idées modernes sur les Enfants" (Flammarion, 1910); the latest phase of the tests is described in L. M. TERMAN, "The Measurement of Intelligence" (Harrap, 1919). C. BURT, "Three Preliminary Memoranda on the Distribution and Relations of Educational Abilities" (P. S. King, 1916), contains the survey mentioned on p. 110. Spearman's numerous researches are summarized in an article, C. SPEARMAN and B. HART, "General Ability, its Existence and Nature" (*Brit. Journ. of Psych.*, vol. v., pt. 1, March, 1912); Webb's are given in full in E. WEBB, "Character and Intelligence" (Camb. Univ. Press, 1915). The important papers by J. C. M. GARNETT and G. H. THOMSON are both printed in the *Brit. Journ. of Psych.*, vol. ix., parts 3 and 4, May, 1919 (Camb. Univ. Press). Spearman's reply to Thomson will appear shortly in the same journal. H. MÜNSTERBERG's experiments are quoted from his "Psychology and Industrial Efficiency" (Houghton Mifflin Co., 1913). A pamphlet by C. S. MYERS, "Present-Day Applications of Psychology" (Methuen, 1918), gives a simple and attractive sketch of the vocational and industrial applications of psychology. The Berlin experiment mentioned on p. 115 is described fully by G. WOLFF in the *Pädagogische Zeitung* for February 28th, 1918.

CHAPTER X

IMITATION

IMITATION is to be understood here as the general tendency shown by an individual to take over from others their modes of action, feeling and thought. It ranges widely through the animal kingdom, and its effects are so subtly interwoven with those of specific heredity that the two are hard to disentangle. The present tendency is to give more weight than formerly to imitation. For instance, in accounting for the resemblances in material and social culture so often found between widely severed communities, present-day anthropologists appeal to imitative "culture-spread" rather than to "evolution" based upon similarity in endowment.¹ And it seems that even among lower animals the rôle of imitation has been underestimated. Young chicks and pheasants are often first set pecking and drinking by the example of their seniors or more adventurous companions, and jungle pheasants and young ostriches are said to perish of hunger in the absence of this natural stimulus to pecking, or of such a colourable copy of it as an experimenter can give by tapping with a pencil.

As the foregoing examples indicate, imitation appears at all levels of conscious activity. The behaviour of the chick in learning to peck or drink illustrates what Professor Lloyd Morgan calls "biological" or "instinctive" imitation. This is the lowest level. At the highest level we have "reflective" or deliberate imitation, of which the regeneration of Japan offers, perhaps, the most grandiose example in history. In

¹ See W. H. R. Rivers, "The Ethnological Analysis of Culture" (Report of British Association for 1911, p. 490).

human behaviour the two types pass into one another by insensible gradations. Let us consider a simple instance. A little girl, released with her comrades from lessons, runs if they run, and joins in chasing and being chased just as a young dog would do in comparable circumstances. This is biological imitation, pure and simple, involving no trace or only a minimum of deliberation. If her special friend, who has learnt the art of "tripping," breaks into that mode of progression, she will be sure, sooner or later, to copy the movement, reproducing it at first clumsily, but in time with ease and grace. Here there is an element of deliberation; for tripping, though a simple variant of running, is not in the same sense a natural movement, and cannot be imitated without a certain amount of attention to its details. Now, suppose the child, a year or two older, to see her elders skipping with a rope. If she, too, is to become a skipper, as she certainly will, she must give more attention than in the last case to the pattern or "idea" of the movement; for it is at once more artificial and more complicated. This is still more necessary when, at a later age, she takes part, say, in a figure-dance in which an elaborate scheme of movements is to be carried out by a group of performers. To apprehend the pattern of the dance, to retain it in mind, and to translate into continuous and nicely adjusted action the part assigned to her, will demand the intelligent exercise of intellectual powers as well as mastery of the constituent movements. Biological has here passed unmistakably into reflective imitation.

We have now material for observations on two important points. The first is the relation of imitative behaviour to endowment, the second its relation to "original" behaviour.

It is evident that in strictly biological imitation the action imitated is simply a stimulus which releases in the imitator a train of activity already prepared. A chick standing in water would not for the first time drink when it sees its mother drink, a child for the first time seeing another run would not

run, unless the engram-complexes involved in drinking or in running were already established in the disposition. As imitation rises towards the reflective level this statement must be modified. There is, for instance, no innate engram-complex waiting to be released in the form of skipping; skipping must be *learnt*. At most there is an innate disposition to be interested in behaviour of this kind, to be attracted to it as a mode of self-assertion. Nevertheless, all the elements of the artificial movement are rooted in nature. What happens in learning to skip is that these elements are brought into relations to which nothing in the original engram-complexes corresponds. Our remarks upon one of Thorndike's experiments (p. 45) will help us here. The child, faced by a situation that impels to action, will be urged to a number of movements, more or less relevant, from which, by trial and error, the proper sequence will eventually be selected. Once selected, it becomes fixed and perfected by "consolidation" (p. 46). But there is in this case a factor absent from the behaviour of Thorndike's imprisoned cats--the child's power to apprehend the pattern or idea of another's action and use it as a guide for her own. That power consists in the child's ability, first, to apprehend the elements of the pattern as corresponding to actions she can already perform, and, secondly, to apprehend the elements in their relations as forming a significant whole.¹ The pattern having been apprehended, the child strives to set up between the movements of which, by hypothesis, she is already mistress, relations corresponding to those they have in the model. This can be done only by trial and error, the process being constantly checked by comparison with the action imitated,

¹ Animals have both these powers, but in a much lower degree. They can *discriminate* or pick out elements in a complex, and they can *synthesize* or recognize unity in diversity; for these accomplishments are involved in all response, whether instinctive or intelligent, to changes in the environment. But the range of their discrimination is limited, and their power of synthesis more so; and they cannot, except the more intelligent ones and in simple cases, carry a pattern "in the head."

and guided by the applause of the onlookers. In this way an engram-complex is finally set up which makes skipping practically automatic. Later this complex may itself function as an element in a still more complicated movement—for example, a skipping dance; or may furnish organized components—such as rhythmic leaping—to an action that does not involve it as a whole.

The connection between imitation and “originality” has the greatest importance for education. Teachers of a modern tendency sometimes discourage imitation on the ground that it “cramps self-expression.” This is a mistake. The most original minds find themselves only in playing the sedulous ape to others who have gone before them along the same path of self-assertion. In his earlier works we cannot distinguish even the voice of Shakespeare from the voices of his contemporaries. Imitation, at first biological, then reflective, is, in fact, but the first stage in the creation of individuality, and the richer the scope for imitation the richer the developed individuality will be. Some corollaries to this truth are obvious; for instance, that children should be introduced through books to a wider and better company than they will meet in actual life. Others require more emphasis. There is a positive danger in the current idea that individual teaching requires as its correlative small groups of pupils. On the contrary, the more store we set on letting the child go his own way, the more desirable it is to widen the field for imitation. Clever and enterprising children help the duller and less adventurous to discover their own powers by showing them what can be done, and by awakening emulation. The group should, then, be as large as possible,¹ subject to the condition that the teacher is not driven to use the authoritarian methods that quench the tendency to imitate.

¹ In the case of young children, at any rate, there is much to be said for a “vertical” classification into parallel groups, each of which contains children of different ages. See Miss Blackburn’s paper in the Report for 1916 of the Conference on New Ideals in Education, p. 206.

This condition is vital. Any attempt to compel imitation tends to defeat its end by provoking an attitude of resistance or indifference—a fact which explains the failure of many well-meant efforts to make young people admire the proper things in literature, art and conduct. We must add that this “contrariant” attitude, which is a protest of the individual against infringement of his autonomy, will be maintained with special stubbornness towards any teacher who is foolish enough to claim, consciously or subconsciously, to be accepted as himself (or herself) a model for imitation.

We commenced this chapter by saying that imitation shows itself in action, feeling and thought. These factors of conscious life are so closely bound up with one another that imitation, beginning in one, commonly spreads to the others. Thus, among girls, imitation of an admired mistress, which may begin with copying her handwriting, her turns of speech and her coiffure, often ends in a wholesale adoption of her sentiments and opinions. The admirer tends to become like the model, so to speak, all through. Anything that obstructs imitation in respect of one of the factors tends to hinder it in the others. We do not usually adopt the accent or dress of a person we dislike, or feel moved by the joys or sorrows of one whose opinions on important matters clash with our own. Thus it is difficult to say whether the difference in speech between different social classes is more a cause or a consequence of the divergence between their interests; in either case it is a formidable barrier between them.¹ The elementary schools can help the cause of social solidarity in no more practical way than by working to raise the standard of speech among their pupils, so that we may become a people who have at least the first requirement for mutual understanding—a common language.²

¹ Bernard Shaw's play “Pygmalion” is a sermon on this text.

² This argument does not point to the suppression of regional dialects where they have form and vigour as well as being racy of the soil. On the contrary, a common love for a native accent and idiom may often be a powerful bond between social classes.

In so far as imitation affects feeling it leads to "fellow-feeling" or sympathy in the strict meaning of the word. Here it does its most important work, for feeling, as we shall later see, is the prime mover of thought and action. Much has been written on this theme, especially by certain French authors under the title "the psychology of the crowd." It is community of feeling that converts a mob of unrelated individuals into a body moved by a single will, and capable of heights of heroism and depths of villainy to which few of its members, acting alone, could rise or fall. The demagogue and the electioneering agent base their tactics on the psychology of the crowd, as does the newspaper man who can make a million readers follow his political gyrations without the least awareness of inconsistency. The fellow-feeling that makes these things possible is the foundation of all *esprit de corps*, whether in a nation, an army, or a school.

The spread of feeling starts, like all imitation, from the prestige of outstanding individuals, generally persons of simple and strong emotions, like Garibaldi or the late Lord Kitchener. These "leaders of the crowd" crop up wherever two or three are gathered together, and are to be found in every school and class. Every teacher must meet them, either as friends or as foes. Where the conditions of work and government are healthy, the natural leaders of the group will generally be friends of the constitution, and are in that case its most useful upholders. But conditions are not always healthy; and even where they are, malignancy may lurk, an inheritance from less happy days. In such a case the teacher should deem it an important matter to discern who are the natural leaders—for they are not always visible to the eye—and, if possible, to capture their loyalty and interest. Where they are obstinately intractable there is only one safe policy left. He must suppress the enemies of peace, *vi et armis*. But let him be sure of his ground before he strikes,

and above all, remember that the weakest thing to do is to attack an insignificant follower and let the real leader of revolt go unscathed.

It is an obvious corollary that no school group can be in a healthy moral condition where there is lack of community of feeling between teacher and pupils. To secure it the teacher must preserve within his adult being a genuine sympathy with the tastes and enthusiasms of youth. It is not enough to affect such a sympathy; for no weakness is more unerringly detected than insincerity in feeling, and nothing leads so surely to distrust and aversion. The person, however much devoted to the work of education, who finds that nature has withheld from him this gift of perpetual youth, should transfer his labour to another corner of the vineyard.

Feeling-spread is almost wholly biological imitation. Some actors, it is true, aver that by throwing themselves into a part they can deliberately create within themselves the emotions they outwardly portray; and it is certainly often possible, in moments of agitation, to acquire something of the coolness of another by imitating his calm demeanour.¹ But these facts merely mean that biological imitation of a feeling is facilitated by action congruent, and hindered by action incongruent with it. Speaking generally, we catch from others, without reflection, their gaiety, their enthusiasm, their terror, or their depression. In thought, however, as in physical movement, both types of imitation are common. Any attempt to understand a statement or an argument, as in following an historical description or in learning a proposition in geometry, may be regarded as a case of reflective imitation; for the essence

¹ According to the celebrated "James-Lange theory," an emotion is only the "backwash" from external and internal movements; "we feel sorry because we cry, angry because we strike, afraid because we tremble." If the theory were true, reflective imitation of feeling would be comparatively common and easy. Most psychologists, however, regard James's view as greatly exaggerated.

of the process is that one seeks deliberately to see through the eyes or think the thoughts of another. The imitation is biological, when the adoption of another's ideas is unwilling; and this is generally called *suggestion*. Suggestion was first studied by the hypnotists; for one of the chief marks of the hypnotic state is that the subject accepts readily almost any idea that is offered to him. It was afterwards found to be a common factor of normal life, and has been made the subject of numerous experimental investigations. The following experiment is typical of the work initiated in this department by Binet.

The present writer recently interviewed, one by one, a number of boys and girls of ten, and, in the course of a friendly conversation, showed each one a postcard-photograph of a yacht sailing alone on Lake Geneva. After a child had examined the card for thirty seconds, a number of questions about it were addressed to him, among them the question: "Was the steamer going in the same direction as the yacht or in the opposite direction?" Only one or two children out of about twenty wholly rejected the suggestion contained in these words, and declared bluntly that they had seen no steamer; some showed signs of disturbance, as if ashamed at their carelessness in perception or their lack of memory; some gave a hesitating answer; but quite a number specified with apparent confidence the direction in which the supposititious steamer was moving.

Whatever the full interpretation of such phenomena may be, they throw an interesting light on the suggestibility of children when questioned by an adult, especially by one whom they do not know or to whom they are in the habit of deferring. They have an obvious bearing on the practice of class-questioning, and on the value of evidence extracted from children either in connection with school crimes or in a court of law.¹

¹ There is now a considerable literature dealing from the legal standpoint with the suggestibility of children and adults.

It is more important to notice the influence of suggestion in causing the spread and maintaining the vitality of public rumours. To illustrate that influence we need only recall the instance—which must for ever be classical—of the mythical 80,000 Russian troops to whose presence in Great Britain during the autumn of 1914 thousands of honest people gave convincing testimony. No case could bring out more clearly the intimacy of connection between suggestion and feeling; the wish was indubitably the father of the thought.

Candid consideration of the facts will show that, apart from such abnormalities as rumour, suggestion plays an immense part in the intellectual life of us all. By what other agency could we account, for example, for the geographical distribution of religious beliefs and distinctive political faiths? The fact that convictions upon such matters have frontier-lines almost as clear as those of States does not prove that “reason” plays no part in their maintenance. But it does prove that, with regard to the things that have most power at once to divide men and to unite them, the function of reason as we find it actually at work is not so much to discover truth, as to clarify, confirm and explore some faith of our fathers which we have received by suggestion. The great Burke, who “chose his side like a fanatic and defended it like a philosopher,” only followed in a grand manner the common habit of mankind.

It would be a profound error, then, to look upon suggestibility as nothing but a deplorable weakness in human nature. Like the routine-tendency and the play-tendency, it is a biological device of the greatest utility in both individual and social life. Without question, man’s ultimate aim should be to order all his affairs, from the lowest to the highest, in the cold, clear light of reason. But life cannot be suspended until that ideal has been realized; and by suggestion the people obtain meanwhile at least

the partial vision without which in literal truth they would perish.

These considerations will help a teacher to decide one of the thorniest questions of professional ethics—namely, the use he should make of suggestion. Let him note, in the first place, that he can no more prevent himself from acting on his pupils by suggestion than he can make himself invisible as he perambulates the classroom. In the second place, let him remember that suggestion is not by nature a foe to spontaneity, but a necessary instrument in the process by which a man becomes truly the captain of his own soul. From the former truth it follows that the teacher is as much entitled to influence his pupils by suggestion as they are to influence one another, provided he does not deliberately impose such influence upon them, but simply puts his superior knowledge and experience of life into the common stock from which the growing minds of his little community may draw each what it needs. From the second truth we deduce that the teacher's suggestive power, so far as it can be controlled, should aim at building up gradually the critical truth-seeking habit, without which man, though born to be free, would remain everywhere in chains. With this end in view the teacher is not only entitled but bound to use suggestion, either directly in his personal teaching, or indirectly through the medium of well-chosen books, as the best means of revealing the ideals of reason.

Do these principles suffice to determine the teacher's proper attitude towards debatable questions of faith, morals and politics? We reply that they not only permit but require him to see that no child shall lose, through lack of opportunity, the inspiration of ideals sanctioned by the best and widest experience of mankind. They indicate, further, that with boys and girls who have reached the storm and stress of adolescence, free discussion of these matters, whenever they naturally arise, is the best prophylactic against unhealthy suggestion—the

suggestion that is propagated in passion and prejudice, and fructifies where ignorance is artificially maintained and honest inquiry is stifled. By means of such debates, connected in a serious spirit, tolerantly, and so that each view is fairly presented, young minds can most safely discover those deepest impulses of their nature upon whose guidance they must ultimately rely.

NOTES ON BOOKS, ETC.

A sound and broad treatment of imitation is given in W. MITCHELL, "Structure and Growth of the Mind" (Macmillan, 1907). For biological imitation see C. LLOYD MORGAN's delightful "Animal Behaviour" (Ed. Arnold, 2nd ed., 1915). M. W. KEATINGE's valuable book, "Suggestion in Education" (Black, 1907), includes an account of Binet's experiments. G. LE BON, "The Crowd" (English trans. published by Fisher Unwin), is a popular treatise which must be read with caution. more scientific and "Human Nature in Politics" (Constable, 1908), is a GRAHAM WALLAS, highly instructive study of the social functions of imitation. Recent work on the topics of this chapter has largely followed the treatment in W. McDUGALL, "Social Psychology" (see p. 139). McDUGALL's views have been lately discussed by B. HART, "The Methods of Psychotherapy" (*Proc. of Roy. Soc. of Medicine*, vol. xii., 1918), and in a valuable paper by E. PRIDEAUX on "Suggestion and Suggestibility" read to the Medical Section of the British Psychological Society on October 28th, 1919.

CHAPTER XI

INSTINCT

WE must now inquire what is the origin of the activities into which the child is born and which he is destined to make his own. Is the rich life of the modern world merely the long result of imitation modified by the free creative efforts of each generation? Or are there, apart from imitation, forces in human nature which determine fixed lines along which our activities must flow and which even free creation must follow?

There are facts which indicate that the second of these questions, rather than the first, suggests the true state of the case. We have spoken of them already as facts of racial mneme (p. 38), and have quoted maternal care as an example of them. A mother in nurturing her child follows the habits of her people and her time, and those habits vary greatly from race to race, from class to class, from age to age; but no one could think that imitation of other women is the complete key to her behaviour. The reader will readily find other instances of the same sort, where the agent obeys an inner imperative with which imitation has nothing to do, except that it supplies the garments with which the activity is clothed. Is it, then, possible that what is undeniably true of some is true of all our activities, and that their bewildering variety is but the ever-changing disguise assumed by impulses whose aims are, at bottom, everywhere the same? If so, it is clearly important for education to know what these persistent types of self-assertion are; for unless we know them we cannot

give intelligent assistance to Nature, and may often be found fighting against her.

At this point, if anywhere, it should be profitable to seek help from the "biological view" of human life. Adult activities are so complicated that they may easily defy direct analysis, and the behaviour of children is soon so much influenced by imitation of their elders that deductions based on it may be misleading. But the higher animals, such as the dog and the ape, lead lives that are in many respects simplified models of our own, and there is no doubt that a large part of their behaviour *can* be analyzed into a moderate number of modes of self-assertion, persistent not merely during the life of the single animal, but through countless generations. We are familiar with them under the name "instincts." It is at least reasonable, therefore, to inquire whether we have not carried those modes of behaviour, or some of them, upward with us in the course of our evolution, and whether they are not still the basis of our complex existence.

In following up this idea we must not be misled by the associations of the term "instinct." Most people in thinking of instinct have in view the often marvellous ways in which animals perform complicated acts they have never learnt for the attainment of ends they are incapable of foreseeing or understanding. Creatures, such as insects, whose lives are ruled by instincts of this kind, are wonderfully well equipped to meet the normal problems of their lives, but display what the great observer Fabre has called "abysmal stupidity" when faced with any emergency for which the routine of the instinct does not provide. That is why instinctive behaviour is commonly regarded as "mechanical," "blind," and the extreme opposite to "intelligent" behaviour; animals, it is said, are guided by instinct, man by reason. Now a thorough-going misogynist could make out a case for applying the adjectives "mechanical," "blind," "unintelligent," even to human mother-instinct, though all healthy-minded

people would see that such a description would grossly misrepresent the facts as a whole. But to take up the misogynist's challenge on this side would be to wander from the point. The real question is whether the behaviour of the human mother is historically continuous with animal mother-behaviour; whether the two are, as a biologist might say, not only "analogous" but also "homologous"—that is, alike in origin as well as in function. To that question there is only one reasonable answer. The basis of mother-behaviour in women is, without doubt, a racial engram-complex which has been handed down the human line from our pre-human ancestors. The complex has, of course, undergone many modifications on the way, but there is at least an important core of identity between its present state in human endowment and its state when we were on the same biological level as the higher animals and behaved as they do.

What is that core of identity, and what is the general nature of the modifications it has undergone? To the first question we reply that the central factor in mother-behaviour, whether in women or in the higher animals, is the "tender emotion" which is evoked by the presence of the helpless young and issues in acts of protection and devotion. It follows that in rising from the pre-human to the human level, we must have retained in our endowment the mnemonic basis of this emotion, with its tendency to be awakened by objects of this kind and to flow out in actions of this character. The answer to the second question is that the mnemonic basis has in its evolution lost certain elements which, upon the animal level, restricted the field of mother-behaviour and confined it to a relatively fixed routine. We must beware here of injustice to our humbler sisters. The not uncommon occurrence of "happy families" shows that the tenderness of an animal mother is not necessarily limited to the fruit of her own womb; and there are credible stories that prove that her protective actions may sometimes travel far beyond the bounds of a fixed

routine. It is plain, however, that parental impulses in mankind are capable of developments enormously wider and richer than animals can ever reach. "Tender emotion" in women or in men—for women have no monopoly of the gift—may be awakened by the helplessness of children—for example, little factory drudges—whom they have never seen, and may issue in results so far from nature as Acts of Parliament and State administration. The important point is that such developments, however remote, are, to repeat the phrase, historically continuous with primitive parental behaviour, and are intelligible only if we keep in view the tender emotion which runs like a clue through the whole series of phenomena, pre-human and human, individual and social, which connects them with their origin.

Thus we reach the notion of instinct which has been so brilliantly developed and illustrated by Professor W. McDougall in his "Social Psychology." As he has said in a later work,¹ an instinct is, in his view, an innate conjunction between an affective disposition and one or more cognitive dispositions. By an affective disposition he means what we should call a complex whose stimulation gives rise to a state of feeling issuing in acts directed towards some definite end; by a cognitive disposition, a complex whose activity is shown in the agent's awareness of, and attention to, a particular kind of object or event; by innate conjunction, the fact that those complexes are parts of a functional whole in the agent's endowment. In some instincts the feeling aroused by the object or situation is a well-defined emotion, such as anger or fear; in others it has less individual distinctness; but in all cases it is the mainspring of the agent's behaviour. Instinctive behaviour conforms to this scheme in men and animals alike; but there is the great difference that in animals it is relatively fixed and stable in form throughout the agent's

¹ "Instinct and Emotion," *Proceedings of the Aristotelian Society*, 1914-15, p. 25.

life, while in men it is capable of endless variety and progress on both the cognitive and the affective sides. It is in this variety and this progressive development that the phenomena of intelligence or reason make their appearance. That is to say, intelligent behaviour is not a specific variety to be distinguished from instinctive, but is instinctive behaviour itself in its higher levels; no longer "mechanical" or fixed in form, but indefinitely plastic; no longer "blind" but illuminated with purpose.¹

These points are easily illustrated. Pugnacity is an example of the instincts in which the feeling-element is a definite emotion—here the emotion of anger. Speaking generally, anger is awakened by something that threatens to obstruct the agent's self-assertion, and issues in acts tending to break down that obstruction. In an animal the occasions of anger are easily foreseen, for the impulses to self-assertion are limited in variety; and the acts to which the emotion gives rise are of a relatively fixed and predictable character. It is pretty certain, for instance, that a hungry dog will be angered if another one tries to capture his bone and that his anger will issue in furious biting. A very young child will behave in an almost equally predictable way if an imprudent nurse snatches a treasure from his hands. But the occasions

¹ In a recent most interesting article on "Why is the 'Unconscious' Unconscious" (*Brit. Journ. of Psych.*, vol. ix., pt. 2), Dr. W. H. R. Rivers tends to rehabilitate the old distinction between instinct and intelligence. He connects them respectively with the nervous mechanisms involved in what Dr. Head calls "protopathic" and "epicritic" sensibility—of which the former has, no doubt, much the greater biological antiquity. Since, however, Rivers does not claim that the "instinctive" mechanisms are functionless in normal human life, but expressly maintains that the "intelligent" systems have taken up into themselves whatever in the older systems is useful—whatever is useless or harmful being relegated to the "unconscious"—his view does not seem, after all, to be necessarily in conflict with McDougall's. For the "useful" parts which are retained from the instinctive systems may still give to the several intelligent systems their special characters, and so preserve substantial continuity between the primitive and the modern forms of behaviour. And, as a matter of fact, the parts retained include the nervous structures that are most active in emotional experience.

of the dog's anger and the acts to which it leads will remain much the same throughout his life. You would not expect the most intelligent dog to be angered by an epigram or to organize a canine conspiracy for his foe's downfall. The child, on the other hand, will grow into a man whose wrath may blaze out at a tale of ancient wrong, or be deeply stirred by an imputation upon the originality of his poems, and may be expressed through twenty years of political agitation or by a scandalous portrait of his critic in his next novel.

In contrast with pugnacity, we may take the collecting instinct as one in which the feeling-element lacks the distinctness of an emotion. This instinct is notoriously shared by squirrels (for instance) and schoolboys. Nature bids the squirrel collect nuts, and prescribes a regular routine to be followed in gathering and hiding them. She lays a similar imperative upon the schoolboy, but leaves his impulses open to the seductions of postage-stamps, cigarette-cards, or regimental badges, or free to follow any other fashion of the moment. The instinct thus fed in youth may develop along the same lines and appear in the grown man as a passion for collecting engravings, first editions or historic relics; or it may deviate from its original direction and make him a miser, a "grangeriser" or a collector of anecdotes about royalty. The acts by which the collecting impulse seeks satisfaction show a correspondingly wide range. The small boy wheedles his treasures out of his father's friends; the rich connoisseur has his agents in every European capital.

McDougall's concept of instinct has not escaped criticism. For instance, Mr. A. F. Shand contends that fear in animals is not linked with a single conative disposition, but may, according to circumstances, issue in flight, in concealment, in "shamming dead," or in other distinctive ways. He maintains, therefore, that there is no one instinct with fear as its central element, but a *group* of separate instincts organized in a system dominated by that emotion. To this criticism

McDougall replies that what Shand regards as a group of instincts within an emotional system is really a "chain-instinct"—that is, the movements of flight, concealment and the rest are successive stages in the unrolling of a single affective disposition.

We are not called upon to take sides in this controversy between two psychologists who have both done signal service to the subject. It is evident that Shand, in confining the term "instinct" to a definite system of innately organized bodily movements, is influenced by the orthodox biological tradition, and that McDougall, on the other hand, is anxious to preserve, perhaps at too great a cost, the architectural simplicity of his scheme. But for our purpose the important thing is their agreement that human behaviour follows lines of organization which make it historically, or biologically, continuous with animal behaviour, and, in particular, that in man the emotional feelings are the "foundations of character."

More recently Dr. James Drever, while endorsing on the whole Dr. McDougall's views, has questioned the primacy of the emotions in instinct. Normally, he holds, the feeling aroused by a stimulus that appeals to an instinct is an "interest" or feeling of "worth-whileness," and the emotion comes upon the scene only if the activity which is the natural outcome of the interest is obstructed. The criticism is valuable, and accords in part with our general position. There is a danger lest McDougall's scheme, too rigidly maintained, should land us back in a quasi-mechanistic theory, leading us to think of a man's self as built up of instincts much as a machine is built up of wheels or a wheel of molecules. We must insist that the organism comes before the instincts, and that these are but special organs of self-assertion that have developed during its racial history. They are, as it were, local differentiations of the general life-activity, which have become established in the organism in virtue of their biological utility, both as means of self-maintenance and as instruments

of creative expansion. From this standpoint we may look upon the emotions as local differentiations of the feeling that colours all the organism's conative dealings with its world.

Drever, however, makes between "instinct-interest" and emotion a cleaner distinction than this view warrants. It is true that in solving a scientific problem or in repaying a good turn I am not swept along all the time on a full stream of wonder or gratitude. Nevertheless, the "worth-whileness" experienced in such activities does seem in each case to be coloured, so to speak, with the same colour as the emotion. In short, it is a special variety of the general feeling of self-activity which from time to time during the course of the activity may either rise to, or fall from, the individual distinctness of the emotion. Much the same account may be given of the "appetites," such as those of hunger and sex, which differ from the instincts in so far as they originate in states of the body, and make use of external objects only in order to reach their appointed ends. Hunger, for example, may rise continuously from a vague readiness for a meal to an almost insupportable craving.

As with the emotions, so with cognition and action. In instinct, we are told, the perception of a specific kind of object leads, through the awakening of a specific emotion, to a specific form of active behaviour. But the instinctive perception of the object is only a local differentiation or intensification of the organism's general power to be aware of its environment; and the specific movements, however wonderfully organized, are only a local differentiation of its general motile power. The instincts doubtless mark out the lines along which both cognitive and motile power have mainly advanced, but the organism, in its creative moments, may use the results of that advance for ends beyond the purview of any of the special instincts. This happens, for instance, in play, where the appetite for life, the lust for self-assertion as such, may employ the whole range of the instincts (p. 73). It happens also in

the "disinterested" activities of science and art. In science man's self-assertion seeks a purely intellectual control over nature (p. 191), and will not rest until he has penetrated her secrets from the stellar system to the electron, has recovered the vanished beginnings of things, and can foresee "what the world will be when the years have died away." So in the arts and crafts, disinterested self-assertion through movement aims at surrounding life with the "significant forms" of beauty.¹

In short, life as a whole, may, with little extravagance, be regarded as the unrolling of an instinct in which the activities of the special instincts are only characteristic moments. For it is a continuous, unified process of self-assertion in which a disposition to action is linked, through the intermediacy of feeling, to a disposition to cognize the external world. Moreover, the general life-feeling has a specially close connection with emotions into which, from time to time, it is intensified. These are what McDougall speaks of as "positive self-feeling," the feeling of exaltation we experience when things go markedly well with us and we are "superior to the situation," and the complementary "negative self-feeling," or feeling of abasement, that comes when self-assertion is baffled or inhibited.

However much Dr. McDougall's scheme must be qualified in detail, its three cardinal tenets can hardly be disputed. (i.) The emotions and their kindred states of feeling are certainly the prime movers of human activity; if they ceased to act, the whole fabric of individual and social life would speedily decay. (ii.) They are without doubt connected indissolubly

¹ Professor Graham Wallas, in his admirable book "The Great Society" (ch. x.), also contends that we have impulses to know that transcend the limits of McDougall's instincts. For him "Thought is a true natural disposition"—i.e., an instinct, which "may be independently stimulated" and not "a merely subordinate mechanism acting only in obedience to the previous stimulation of one of the simpler instincts." This view, while leading to much the same results as ours, differs from it by making "Thought" itself an instinct side by side with those which McDougall recognizes,

with specific types of activity of essential importance in the growth of the individual and in the maintenance of society. (iii.) The forms of these activities are capable, in man, of indefinite development and inter-relations without losing their historical identity. The bearing of these truths upon educational practice is as clear as it is important. The comparative fruitlessness of so much educational effort is mainly due to neglect of the feelings which are the proximate sources of human energy, the real springs of educational progress whether in learning or in conduct;¹ and where there is not only neglect but repression, the harm done may, as we have seen (pp. 55-6), reach the dimensions of a disaster. It is, then, plainly necessary that we should study with some care the rôle of feeling in the evolution of individuality.

NOTES ON BOOKS, ETC.

W. McDougall, "An Introduction to Social Psychology" (Methuen, 9th ed., 1915), is the fountain-head of most of the applications of the idea of instinct in education, sociology, etc., and may justly be called a classic. Important discussions by leading psychologists, biologists and philosophers, largely centring round McDougall's definition, are in the *British Journal of Psychology*, vols. iii. (1910) and x. (1919) and in the *Proceedings of the Aristotelian Society* for 1914-15. C. LLOYD MORGAN, "Instinct and Experience" (Methuen, 1912), by one of the first biological authorities on instinct, is a delightful treatise on the main points raised in the earliest of these discussions. JAMES DREVER, "The Instinct in Man" (Cambridge University Press, 1917), is a valuable review of the subject, in the main confirmatory of McDougall's views. A very able exposition of a different point of view, substantially that of William James, is given in E. L. THORNDIKE, "Educational Psychology," vol. i. (Columbia University, 1913).

¹ Dr. Keatinge ("Studies in Education," ch. iv.) claims a high place for æsthetic subjects, on the ground that they give scope to the emotions. We object only to the implication that such scope need not be provided elsewhere. On the contrary, a chief defect in current teaching in such subjects as mathematics and science is precisely its lack of appeal to the proper kinds of feeling. See the chapter on Science in Adams' "The New Teaching" (Hodder and Stoughton, 1918).

CHAPTER XII

THE GROWTH OF THE SELF

JACK, aged seven, visiting for the first time a large town, is taken for a ride in an electric tram-car. He is immensely intrigued by the wonderful doings of the conductor and the driver, and his pertinent but unhappily-timed questions cause his mother no little embarrassment. The journey over and tea disposed of, he begins at once to live again through the afternoon's experiences. The drawing-room becomes a tram-car, his mother and complaisant aunts the passengers. He, of course, is conductor, but, in the absence of a play-mate, doubles his part and also serves the motor. Armed with a bag for pouch and a table-gong for bell-punch, he collects fares, issues carefully perforated tickets, stops and restarts the car, and occasionally, in his secondary capacity, rushes to the brake and sounds the alarm to trespassers on the rails. In the full tide of his importance he is carried away, indignant and protesting, to bath and bed.

For two or three days, perhaps, Jack is, in the main, a tram-man. Then there flashes upon his vision the glory of being a horse-guard, protecting in shining armour the entrance to the Park; or a milkman going his rounds with churns and barrow; or a clergyman conducting a christening; and the one time tram-man becomes a guardsman, a milkman, a clergyman, and so on indefinitely.

Let us consider this familiar tale in the light of the preceding chapter. The first thing to note is that it begins with an appeal to a definite instinct—the instinct of curiosity. But

the tram-man, the guardsman and the rest do not come before Jack merely as trivial novelties attracting a moment's attention. They have an impressive quality which, though not so overmastering as to reduce him to impotence and evoke fear, or the high degree of negative self-feeling we have called "abasement," is yet pronounced enough to challenge a readjustment of his being to something that cannot be dismissed or ignored. The play that follows is his reply to the challenge. It is the positive phase of behaviour which follows and completes the preceding negative phase, and is supported by positive self-feeling that may rise, at moments of outstanding achievement, to the level of "exaltation."

We must next observe that as long as Jack's self-feeling is set, say, towards tram-conducting, all the other instinctive and emotional tendencies, so far as they are relevant, take their cue from it. "Acquisitiveness" specializes, for the time, in tram-tickets; "experimentation" ("constructiveness") serves only the business of the hour; anger rises promptly to answer interference with that business, but lets other occasions go; grief clings to failure in it, or fixes its gaze on lost opportunities; desire urges, and hope looks forward to its renewal.

This kind of play might be described as experimental self-building; for it differs from the serious business of self-building only in the relative instability of its results. During the age of making-believe, self-assertion, like a wandering compass-needle, points, now this way now that, attended in its veerings by the positive and negative self-feelings, and carrying with it the other emotional tendencies, all of which, for the time being, make its objects their own. In a dozen years, Jack, who at seven was everything by turns and nothing long, will have entered, say, upon his promising career as an electrical engineer. He has long been indifferent to the seductions of tram-conducting or the milk-trade, and is content to let others make their fame, unchallenged, in the Army or the Church.

His self-assertion has taken up permanently the direction of electrical engineering, and is not to be diverted from it except in holiday moments. But beyond the fact that it is committed to a specific line of growth, there is, in principle, no difference between Jack's self at twenty and his experimental selves at seven. The cardinal feature still remains—namely, that the energy of his instinctive or emotional life flows, for the greater part, along the direction given to it by the “set” of his self-assertion. The impulses rooted in curiosity and the “experimenting” tendency serve mainly this dominant interest, and become organized into scientific knowledge and technical skill; while those that belong to the self-feelings, to anger and to the other primary and secondary emotions, conspire with them to feed the main current of Jack's development. Ere long the youth's very bearing and dress will, to an experienced eye, betray the electrical engineer, and he will with difficulty conceal his profession during an hour's conversation with a stranger.

It is now clear that the growth of the self may be described as a process in which the impulses that have their roots in instinct and appetite become organized into a permanent hormic system (p. 30), wielding imperial authority within the organism; or as the building up of a great engram-complex around the emotions and appetites, and the dispositions to knowledge and action which belong to them and derive their energy from them. Like all complexes, the self-complex must be thought of not statically but dynamically (pp. 47-8). It is the relatively permanent basis of the agent's individuality as this is expressed in a unified system of thought, feeling and action; but it is constantly modified by the results of its own activity (p. 44), and constantly becomes, by consolidation (p. 46), a more coherent, definitely shaped structure, subserving a higher degree of expressiveness (p. 31).

It is this great complex whose growth and activities are brought out by the insight of a good biographer or pictured

by the imagination of a great novelist. We cannot attempt to unravel all its complexities, but, adopting the masterly analysis of Mr. A. F. Shand, we may profitably note that it is largely built up of certain massive sub-complexes of a typical character whose activities are *sentiments*. The reader will understand the technical meaning Shand gives to this word if he will reconsider Jack the tram-man, and recall how, for a while, all the passions of his being were gathered up into the pursuit of a single object. If that state had proved permanent instead of transient, we might have said that a "sentiment" for tram-conducting had become established as a constituent of Jack's self. In short, a sentiment is not a single state of feeling, but a *system* of feelings—that is, of emotions, appetites and desires—organized with reference to a particular object, and having a considerable degree of stability.

The pleasant vice of puffing tobacco-smoke affords a simple instance of a sentiment. The basis of smoking is a group of bodily appetites which only psycho-analysis, perhaps, could trace to their origins; but round these low-grade impulses there may grow up an emotional structure capable of raising a sensual habit to the dignity of a social function—even of a ritual in which womanhood savours its hardly won freedom! *L'homme moyen sensuel* looks forward eagerly to his smoke, curses the lack of tobacco or matches which robs him of it, seeks to prolong the pleasures of fruition, takes pride in his expert judgment of brands and pipes, and at times "knows love's sad satiety," followed in due course by a blissful return of appetite. All these things are marks of a genuine sentiment. *Mutato nomine*, they may also be said of the normal woman's attitude towards dress—a matter on which discerning philosophers have written with the gravity due to its importance. Here again is a sentiment which, arising from a humble need of the body, draws into its empire a wide range of emotions, and gives exercise to high powers

of æsthetic judgment and practical skill. It may sometimes serve unworthy ends, but only a dull or prejudiced critic could belittle the spiritual heights to which it may attain; a generous observer will see how important a part a gifted woman's dress-sentiment may play in developing a gracious individuality, and will thankfully appreciate the value it adds to social life.

These two sentiments are both examples of *love*—the love of smoking and the love of dress. As such they illustrate Shand's weighty point that a love is not a single emotion, but a system embracing a manifold of feelings, which arise, replace one another, disappear and return, in accordance with the varying phases of the agent's relations with the beloved object. In antithesis with the loves we must set the hates. These, too, are sentiments, and—though the fact is at first surprising—involve no emotional element that may not also appear in the loves. To hate smoking, for instance, is, like loving it, to feel pleasure, displeasure, regret, relief, hope, disappointment, and so on; the feelings are the same, only the occasions are different. Love delights in the presence of its object and strives after fuller and richer intercourse with it; hate finds it an offence, and seeks to destroy it, or at least to avoid its presence.

It is an ancient and profound truth that education should teach men to love and to hate the right things; but the aphorism must not lead us into the error of supposing that love and hate are of co-ordinate value. A love, since it urges one to explore and develop the riches of its object, is a principle of growth, of expansion; a hate, since its aim is to destroy relations with its object, is, so far, doomed to sterility. Hate is fruitful only when made to subserve a love, by eliminating hindrances to its growth or purging it of elements that deface its nobility. Thus the "patriotism" whose core is the hatred of other nations is a poor and fruitless thing, but hatred of the deeds that stain our country's history is the obverse of

a noble regard for her honour. Similarly—to compare a smaller thing with a greater—hatred of “sloppiness” and inexactitude is a necessary element in every type of “scholarship.”

We conclude that the central duty of school teaching is to encourage loves, and that it should use hates only as the gardener uses his pruning knife to remove the rank growth that wastes the sap of the tree, and spoils its beauty. It follows also that the first step in teaching any subject should be to lay the firm foundations of a love, by so presenting it as to tempt the pupil to a joyous pursuit. If this step be well taken and wisely followed up, there is no need to eliminate the drudgery inseparable from any subject worth serious study. The course of true love never did run smooth, because it never could; for only difficulty, disappointment and hope deferred can evoke the energy that makes a genuine sentiment.

From this digression let us return to Jack, and seek to fill up some of the gaps in his psychological history.

About the inner life of a baby nothing can be directly known; we can only observe and interpret his behaviour much as we observe and interpret the behaviour of animals. There is, however, no doubt that in the earliest months one of the strongest constituents of the self is established—the sentiment or group of allied sentiments that grows up around the primitive bodily appetites and the pleasures and pains of the physiological functions. According to the psychoanalysts the early history of these sentiments has profound significance for later years; for it does much to determine whether the child will be yielding or obstinate in temper, whether he will become an “extrovert” finding his business in outward things, or an “introvert” concerned mainly with his own feelings and thoughts. And ages before Freud it was recognized that the sentiments connected with bodily satisfactions have the greatest importance for character,

whether they develop into the self-indulgence of the voluptuary or the asceticism of the saint.

Next, gradually separating itself from the sentiments of the body, the mother-sentiment appears, to be followed, *longo intervallo*, by the father-sentiment. There now arises a situation which, if we are to believe Freud, deserves, far more than any situation of adult life, to be called "the eternal triangle." However much we may discount Freud's gruesome theory of the "Œdipus-complex," there is no question that Jack will acquire from his relations with his parents—and, to a smaller degree, with his brothers and sisters—engram-complexes that will powerfully influence, for good or evil, his subsequent conduct and happiness. Thus, though it may be too absolute to say that Jack, when he goes a-marrying, will be unconsciously seeking his mother again, yet it is safe to predict that his behaviour in the new relation will be greatly affected, positively or negatively, by the character of the first intimate intercourse of his life. For, as Mr. Shand has pointed out, and as we have already suggested, every strong sentiment generates its own peculiar qualities which tend to reappear in analogous sentiments. Similarly, the qualities developed in Jack's sentiments towards the family cat and dog may be expected to colour his behaviour towards human beings over whom he has the same despotic power, or, if they do not appear in the same form, will probably be expressed symbolically or show other signs that they are working in the darkness of "the unconscious" (pp. 47-53). Similarly, again, Jack will discover in the development of his sentiments towards his school studies the ideal of patient and thorough work to which he will owe so much of his success as an electrical engineer.

We may suppose Jack now to have reached the age of seven. He has already completed much of his education—perhaps the most important part, both quantitatively and qualitatively. For, on the one hand, he will certainly not learn as much during any subsequent septennium, and, on the other hand, he has

acquired the absolute essentials for civilized living; he has even learnt, perhaps, to read and write. His visible progress has not been uniform; for apparent mental growth, like physical growth, advances not in a straight line but in waves. Until the age of three, Jack was climbing rapidly up the first wave, and is now in slack water. But this is true, we repeat, only of what is seen. During the last couple of years a great deal of consolidation has been going on beneath the surface, and that is of equal importance with visible advance. After a second period of rapid movement, a second slack time may be expected about the age of fourteen; while a third great wave will carry the youth on to the middle twenties. At that age, as James says, old fogeydom already lays his hand on most of us, little as we may expect it; there are no more revolutions, but only consolidation and humdrum progress along lines already fixed.¹

Each of these new departures is preluded by the emergence of new types of instinctive impulse, or at least by changes in the range and relative importance of the existing types. During the first seven years, home has given Jack all he needed; he has been contented to go his own way, finding his own pleasures, and using his elders shamelessly as means to

¹ W. Stern, whose judicious summary ("Tatsachen und Ursachen der seelische Entwicklung," *Ztschft. f. ang. Psych.*, 1907) is very helpful here, does not fail to point out that the law of undular advance holds for particular accomplishments as well as for general development. He records, for instance, that his child had, at fifteen months, fifteen words at her disposal. For some months she appeared to gain very few more, though her parents noted (at nineteen months) their impression that her "speech-reservoir" was silently filling up and must some day suddenly overflow. Their expectation was fulfilled; for during her twenty-fifth month she made use of more than fifty words for the first time.

Similar phenomena occur at all ages and in connection with all branches of learning, and are, as Stern rightly insists, of much importance from the standpoint of teaching-method; the most active mind needs its "incubation-periods" during which to consolidate past achievements and to prepare for a fresh advance. (Cf. Ballard's experiment, p. 46.)

We may add here that the waves of development in girls appear, as a rule, a year or so before they appear in their brothers, and spend their force earlier. There are, nevertheless, good reasons for giving girls an additional year of school before sending them to the University or into business.

them. For the last year or two he has attended a "Montessori school" or a Kindergarten, and has enjoyed his life there immensely, finding the school a glorified annexe to home, where one has more interesting things to do with less interference from fussy grown-ups. But as eight approaches he begins to hear the call of larger interests, and to feel the need of other children to be no longer "supers" but fellow-actors in the drama of life. Home loses its all-importance, and shrinks to a base of operations where one repes and refits between dazzling adventures with joyous comrades in the great world. Jack is enrolled in a pack of "Wolf cubs," and joins the junior department of the neighbouring grammar school.¹ Here, being a lad of good parts, he rapidly develops intellectual as well as practical interests, and, between his games, becomes a great reader. In this way, and by ruthless questioning of informative elders, he picks up a considerable amount of assorted learning, and by twelve has acquired an astounding knowledge about aeroplanes—a subject in which he has latterly been specializing with enormous energy.

The broadest difference between the earlier phase of childhood and the one Jack has now reached may be expressed in Freudian terms by saying that the former is ruled by the "pleasure-pain principle," the latter by the "reality principle." We have noted this difference in play (pp. 83-4), seeing how the infant's activities first develop in a fantasy-world which answers instantly to his desires, and only later become disciplined to the conditions of reality. It would, however, be an error to regard the pleasure-pain principle and the reality principle as connoting radically different types of impulse. The transition from one to the other consists in the gradual permeation of relatively blind instinctive impulses by intellectual elements, in conformity with McDougall's

¹ We must pardon Jack's parents their middle-class snobbery, hoping that when he himself is a father (or at least a grandfather) the "public elementary schools" will have become truly "common schools."

general law. At the same time, the conflict between the principles of which Freud speaks is a real and important thing. The boy of twelve is, in the main, a realist who has learnt to comport himself in his world (especially in his social world) as its nature requires; but he is liable to lapses in which the complexes underlying his normal behaviour lose their coherence (p. 75), and his impulses seek, as in infancy, short cuts to satisfaction. Hence the sudden fits of "temper," of selfishness, and of other forms of naughtiness into which the best of boys or girls may fall.¹

But this general difference is associated with one more specific—the definite emergence of the herd-instinct or "gregariousness" which is the main root of social conduct. Like all instincts, gregariousness develops from the level of simple, unorganized impulse to that of highly intellectualized behaviour. The boy of ten is a gregarious but hardly a socialized animal; he still regards the world as his oyster, but demands the help and countenance of others in opening it. Thus he is essentially a member of a hunting pack in which he is either a leader or one of the led.² He rarely attains to

¹ A writer in the Educational Supplement of *The Times* (June 19th, 1919) points out that the "childishness" of adults is to be referred to the same cause, and contrasts this behaviour with the "childlikeness" or simplicity that often characterizes a thoroughly harmonized and stable nature. Upon the view of Dr. Rivers (p. 134, footnote) the forms of behaviour dominated by the pleasure-pain principle and the reality principle would, presumably, be correlated, respectively, with the older protopathic and the newer epicritic nervous structures. The conflict of which Freud writes would be referred to the fact that the earlier structures may, at times, function in normal persons, as they do in some insane subjects, in quasi-independence of the more recent.

² It will be observed that Dr. McDougall's positive and negative self-instincts, when associated with the herd-instinct, take specific forms which Professor Graham Wallas has happily termed "the instincts of Giving and Taking the Lead" (*The Great Society*, p. 142).

In the view of some writers—e.g., Carveth Read (p. 39)—the herd-instinct arose historically when our prehuman ancestors, who were probably non-social, were compelled to turn from vegetarianism to flesh food, and were driven to hunting in packs like wolves. The reader will note the psychological insight which led Sir R. S. Baden-Powell to institute the "Wolf Pack" for boys too young to sustain the dignity and fulfil the law of the Scout.

the higher levels of social conduct until he is swept up to them on the last great wave of his development—adolescence.

The growth of the instinct illustrates very clearly Dr. McDougall's general theory. It is a mistake to think of it as an innate tendency towards social behaviour in the eulogistic sense of the word "social"; it consists, at first, in impulses, morally colourless, which simply urge a child to find his life in active relations with others. The course of those relations is settled rather by the subsequent history of the instinct than by its original character. Thus there are people, in whom the instinct is strong, who are miserable when they are alone because they have then no one to quarrel with! But it is evident that if a child is to live in constant intercourse with others, he must make his ways square with theirs; he must make their *mores* his own. Hence the morality which the child first adds to the simple ethic of family life is the law of his pack: the club-law, which remains, with the majority, the most powerful influence on conduct throughout their days. With the advent of adolescence what was in the main an uncritical acceptance of the ways and standards of the herd may, however, deepen into an explicit "social consciousness" of a truly ethical or religious character. The adolescent often cherishes, with generous heat, ideals of social service and sacrifice for others; he may set himself deliberately to increase the happiness or to raise the ethical level of his society; and may even be driven, if it proves to be hopelessly out of harmony with his new-found ideals, to repudiate its claims upon him, and to transfer his allegiance to some company of elect souls, the noble living or the noble dead.

Social life, created and sustained by the gregarious instinct, is thus the primary school of morals in which all men are formed. Speaking generally, the principles of conduct learnt there are those that tend to subserve the stability and well-being of the common life; but, since societies have grown up under the most varied conditions and have widely different

histories, there have been and still are great divergences between their actual moral codes.¹ Even within the limits of a single social group there may be differences of life so marked and so constant as to generate widely diverse conceptions of virtue and vice. According to the American sociologist, Thorstein Veblen,² the social structure of the modern Western nations still retains, in transmuted form, a moral bifurcation of this kind, established in the barbarian stage of their cultural development. Barbarian man reserved to himself all functions connected with government, warfare, hunting, religious observances and sports; and he relegated all base, mechanical functions to his women. With the growth of slavery this division of functions ceased to have the simplicity of a sex-distinction, but it persists in modern societies as the difference between the leisured, non-productive classes and the "lower orders" who labour with their hands.

Now the important point is that the primitive severance of functions produced two very different schemes of values; in short, two moral traditions, in part complementary but in part sharply opposed. The masculine tradition gives honour to the qualities that ensure success in aggressive and predatory activities, to the ostentatious accumulation of property beyond the needs of use, to "conspicuous leisure" in which the lord's women-folk and retinue must share for the increase of his glory, to social splendour, finally to learning and art—for these, too, offer opportunities of patronage and a field of useless occupation where the humbler or less robustious members of the honorific class may find scope for an "instinct of workmanship" that cannot be wholly suppressed. The feminine tradition exalts peacefulness, pity, loving-kindness, endurance of toil and hard living, and the other qualities that make for success in productive and industrial activities.

¹ The facts collected in such works as Westermarck's "Origin and Development of Moral Ideas" show impressively how great the divergences are.

² "The Theory of the Leisure Class" (Macmillan, 1905).

The social stir and confusion that mark the modern age is due mainly to the present tendency of the two traditions to overflow their ancient borders. On the one hand, the mechanical class threatens the preserves of the predatory aristocracy. The rich merchant hankers after a country estate; the smaller tradesman must have his suburban villa with well-trimmed lawn and "conspicuously useless" flower-beds; the artisan demands leisure to pursue sport, learning or art; the lowliest peasants discard their convenient and graceful costumes to assume the garb of those who neither toil nor spin. On the other hand, the aristocracy are, with increasing frequency, engaging in industry and commerce. They go upon the Stock Exchange or into banking, they become company directors, they take ranches in the newer countries, they even engage in trade. And more significant still, there is in all classes, especially in the higher, the demand of women for "emancipation"; a demand, says Veblen, motivated partly by a determination to escape from their barbarian status as foils to men, partly by a longing to satisfy the "instinct of workmanship" in which woman's nature is so rich.

Other writers have emphasized another discrepancy in our moral traditions: namely, between the tradition of home life, where the rule is co-operation for the good of all, and the tradition of the economic world, where every man's hand is against his fellows. The practical conclusion they reach is, in principle, the same as that which follows from Veblen's study: if our civilization is to be healed of its present sickness, if social equilibrium is again to be reached, it can be only through a fusion of the two moral traditions which will give woman-morality its due place in every department of life.¹

¹ This is the burden of Alfred Corner's stirring little book, "The End of Male Ascendancy" (The Peto Publishing Company, 1917) and of some profound pages in B. Branford's "Janus and Vesta" (see p. 220). It is also the leading idea in Benjamin Kidd's "Science of Power" (Methuen, 1918).

Our concern with these views is not to assess them, but to use them to exemplify the principle that the moral code actually expressed in men's deeds, in distinction (often a painful distinction) from the code they officially profess, is a function of the concrete social order wherein they live and act. That principle has most important educational corollaries. It not only explains the existence of that unsatisfactory thing called "schoolboy morality," but shows that no moral instruction can change it unless the form of the school society is itself changed. It also shows, conversely, that moral instruction is useless unless it is based on the actual social experience of boys and girls, and helps them to solve the problems of conduct their experience presents. Thus, it reinforces the principle that the school should give its pupils scope to work out their own education freely under the guidance of sound traditions (p. 103). Lastly, it reminds the teacher that the moral tradition he himself follows and tends to propagate is almost certainly coloured by some specific type of social experience and history. It challenges him, therefore, to ascertain its sources, and so assure himself that it represents not the narrow outlook of a single class, or even of a single people, but something universally human.

The social instinct, we have said, begins its finer work as adolescence approaches. Jack, we may suppose, has now reached that great climacteric, that new birth of body and mind. The premonitory symptoms have been evident for the last year or two: a sudden increase in height, a loss of the rounded features of childhood, a deterioration in the treble voice that did such good service in the school choir. It has been remarked, too, that his zeal for study had diminished, that he had deserted his old hobbies, that he had become a little moody and intractable—in short, that he seemed to have lost his bearings. But though, at sixteen, he is no longer the same Jack, he is rapidly shaping into a new one. He displays a

startling solicitude about his appearance, is exacting on the question of collars, resents imputations on his manners, and is conscious, evidently in a bewildering new way, of the existence of the other sex. As regards work, he has pulled himself together in time to pass his matriculation examination creditably, and is now entering upon an advanced course in science and mathematics with great vigour, and with a clear awareness that he is laying the foundations of his professional career. Indeed, if he were not at least equally zealous for the honour of his school in sports, and serious about his duties as a prefect, he might degenerate into that deplorable character, a "swot"! His inner mind is not nearly so accessible as of old, but those who are privileged to glimpse into it find great changes there. Jack has stumbled into the discovery of two infinities—the infinite in nature and the infinite in his own soul. The childish fancy that once played capriciously with the outer world is replaced by the imagination that seeks its deeper meaning. He is just now reading Keats and Darwin with hot enthusiasm and a vague feeling that they belong together. He will gladly talk about them with his intimates, but about his other discovery he is silent. It is known, however, that he slips off to church on unofficial occasions, and it is suspected that he has a copy of Thomas à Kempis concealed in his bedroom.

These things are clear evidence that new sentiments are springing up in Jack's nature, and that some of the earlier ones are changing their objects and becoming greatly widened and deepened. These will, no doubt, exhibit many qualities carried over from his childish sentiments; but repressions and sublimation have been active during the period of change, and much of the older material has been worked up into forms novel enough to give a fresh turn to the lad's character.

Among the expanded structures we must take special note of what McDougall calls the self-regarding sentiment. In early life our sentiments are almost as "objective" as the

animals'. A greedy little boy aims at the largest share of the chocolates as simply as a greedy dog aims at getting the largest share of the bones; a little girl in a pretty new frock indulges her positive self-feeling almost as naïvely as a peacock exhibiting his tail. Even in adult life such objectivity remains possible; a man may often be so much absorbed in the immediate object of his activity as to forget everything else. But in quite early days man, as distinguished from other animals, begins first to recognize, then to appreciate himself as an actor in his life's drama. "Self-consciousness" probably arises from the infant's discovery of the distinction between his body and all other things, a distinction made possible by the pleasures and pains that are found to be connected with the body. In time it spreads from this centre to his clothes and his toys, to his family and friends; in later years to the house he owns, to his prize dogs, to the business he has built up, and so on indefinitely. For his dealings with these things give rise not only to sentiments directed immediately towards them, but also to a secondary "self-regarding" sentiment directed towards them as inseparably connected with his feeling and acting self. In short these things become, so to speak, the capital with which he consciously faces the world; and that capital, as it prospers or dwindles, is the object of joy or sorrow, hope or fear, and of the other systematized feelings that may enter into a sentiment. Meanwhile he learns, through relations with others, to focus his attention upon himself as an agent and upon the character of his acts. Through the praise and blame, the rewards and punishments of parents and teachers, through the frank verdicts and merciless practical criticism of his school-fellows, through the more restrained but yet more terrible force of "club opinion" in adult life, he comes to entertain towards himself as an agent emotions and desires that enter into and become the strongest part of the self-regarding sentiment.

A healthy adolescent has usually reached in this way a

fairly coherent conception of his self as an "ideal object," including some vision of what he actually is and some prevision of what he may and should become. It may be merely the idea of a self that keeps strictly within the limits of "good form," or of one inspired by teaching, observation and reading to stretch out towards original lines of achievement and lofty ends. And when it is formed, the self-regarding sentiment, whose object it is, plays in all the affairs of his life, especially in its crises, the dominant and most widely controlling part.

It will be seen that the function of the self-regarding sentiment is to exercise control over the "objective" sentiments that form the ground-basis of the self. Suppose a money-loving man to have the opportunity of making great gain by safe but questionable means. A habit of honesty, acquired like a dog's, may keep him straight, but if this is not strong enough, there may still be, in the self-regarding sentiment, a reserve force sufficient to restrain the impulses that belong to the sentiment for gain. The man turns his mental gaze back from the immediate object of the sentiment and views himself as the agent in this dirty business. His self-contemplation is coloured by the shame and remorse he had suffered through backsliding in the past, and by anticipation of possible shame and remorse to come; and the thought of himself as the doer of this act is, we may suppose, rejected in a moment of aversion that wells up out of the self-regarding sentiment.

This trite example may suffice to show how the self-regarding sentiment becomes the vehicle of "conscience" and of the moral will that waits on it, and also to indicate the essential part played by the social instinct in the generation of conscience. But the sentiment serves another controlling function of high importance. If, like Professor James, "I, who for the time have staked my all on being a psychologist, am mortified if others know much more psychology than I;

but I am contented to wallow in the grossest ignorance of Greek," it is because my self-regarding sentiment has firmly attached itself to myself-as-a-psychologist as its "ideal object." In brief, the sentiment acts like a gyroscopic wheel, keeping my self-assertion true to its main direction of expression (see p. 142).

We must, however, be careful not to take too simple a view of this function. The ground-basis of the self is, as we have seen, a very complicated thing, prompting to developments in many directions, some of which would prove, in the end, quite incompatible. A man, gifted by nature and smiled on by fortune, may approximate to the Greek ideal, and build up a self into which the love of the body, of family and friends, of riches, of intellectual and spiritual things makes a unified and nicely balanced whole; but even a man of "strong character" generally has to make drastic sacrifices among his possibilities, while a man of weak character wobbles and drifts and reaches no stable self at all.¹ The average man compromises; he tries to run several more or less distinct selves, among which there must generally be, in James's phrase, a certain conflict and rivalry. Thus Jack at the age of forty will not be merely an electrical engineer. He will be also, we may imagine, a devoted family man, keen upon backing his wife's social pretensions, and on securing his children's future; an esteemed churchwarden, who stands well with the vicar and is not indifferent to his reputation for serious views and good works; and, perhaps, a golfer sternly bent on re-

¹ A quotation from James's famous chapter ("Principles of Psychology," ch. x.) is inevitable here: "Not that I would not, if I could, be both handsome and fat and well dressed, and a great athlete, and make a million a year; be a wit, a *bon vivant*, and a lady-killer, as well as a philosopher; a philanthropist, statesman, warrior, and African explorer, as well as a "tone-poet" and saint. But the thing is simply impossible. The millionaire's work would run counter to the saint's; the *bon vivant* and the philanthropist would trip each other up; the philosopher and the lady-killer could not well keep house in the same tenement of clay. Such different characters may conceivably at the outset of life be alike *possible* to a man. But to make any one of them actual, the rest must more or less be suppressed."

ducing his handicap. And he will be singularly fortunate if his organism can carry these diverse selves without occasional distraction and conflict.

Even in normal cases, then, the self-regarding sentiment does not exercise perfectly its function of control over the development and organization of the primary sentiments; to a certain extent it is liable, so to speak, to be divided against itself. In pathological cases a group of sentiments may get so entirely out of hand that the division in the self-regarding sentiment becomes complete, and to say that the organism harbours more than one self is then a statement of plain fact. These are the cases of "multiple personality," of which one of the best studied¹ is the celebrated case of "Miss Beauchamp," the University student whose organism, as the result of some moral shock, produced a vigorous secondary personality calling herself "Sally"—a personality with all the liveliness and caprice of a naughty child, who from time to time displaced the prim Miss Beauchamp from command of her sense-organs and powers of movement, and horrified that innocent young woman by the scandalous levity of the conduct for which she was made to appear responsible.

We need expect no such catastrophes in the life of Jack, whose supposititious career has been used as the occasion for our psychological comments; but their existence and nature strongly confirm the view of the self, as a gradually developed organization, which we have attempted to make clear.

¹ By Dr. Morton Prince ("The Dissociation of a Personality," Longmans, 1906). Other famous cases are described in James's "Principles." B. Hart, "The Psychology of Insanity," ch. iv. (see above, p. 57), gives a very clear analysis of the phenomena of dissociation—which are, as the reader will see, closely connected with the facts of relaxation described on pp. 74-5.

NOTES ON BOOKS, ETC.

Mr. A. F. SHAND's theory of sentiments is expounded and used in McDougall's "Social Psychology" and developed at length in his own book, "The Foundations of Character" (Macmillan, 1914). J. M. BALDWIN, "Social and Ethical Interpretations" (Macmillan, 1899), illustrates fully the inter-play of positive and negative moments described on p. 140. J. W. SLAUGHTER, "The Adolescent" (George Allen, 1912), is an excellent little book for those who cannot face STANLEY HALL's monumental "Adolescence" (Appleton, 2 vols., 1904). The first chapter of L. T. HOBHOUSE, "Morals in Evolution" (Chapman and Hall, 2nd ed., 1908), gives a masterly analysis of the rôle of the social instinct in moral growth.

CHAPTER XIII

THE MECHANISM OF KNOWLEDGE AND ACTION

IN the preceding chapter we traced the growth of the self mainly in terms of feeling, for the reason that our appetites and emotions are in a special sense the "foundations of character." But, with the discussion of Chap. XI. in mind, the reader will readily see that there can be no organization of feelings into sentiments, of sentiments into a self, apart from a parallel development in the objects to which feeling responds and in the actions that issue from it. Thus the simple emotion of fear may be awakened, say, by the explosion of a bomb, but the sentiment of hatred that grows out of it has a much more remote and complex object, such as war, while the self as a whole responds to still more abstract objects, such as duty; and the actions that flow from the emotion, from the sentiment, from the self, show a corresponding increase in complexity.

The task now before us is to study in more detail the growth of cognition (or knowledge) and of action. For education, it is of the highest importance to realize that cognition and action always occur in an organic unity from which neither can be separated without destruction of the other. In the simpler activities the connection between them is easily brought out, even when it is not immediately obvious. It is clear, for instance, that one cannot "take in" the form of an object or the contents of a picture without constant adjustments of head and eyes, including delicate movements of the focusing muscles. Again, if the reader will open his

mouth, hold his lips widely apart, and think how such words as "prism," "parallelogram" sound, he will probably be aware of an almost irresistible tendency to move lips and tongue, and find that he cannot pronounce the words "mentally" unless at least he deliberately recalls how the movements of those organs would "feel." Conversely, if he will scribble a few sentences, attending meanwhile to what goes on in his mind, he will probably notice that the act of writing is accompanied by "inner speech"—that is, by the silent repetition of the words in his own voice or another's; and he may, especially where he is uncertain of the spelling, have before his "mental eye" a fleeting vision of how the words look in print or script.¹

In the higher types of intellectual activity the connection between cognition and action becomes so subtle that it needs careful analysis to bring it to light; but it can always be detected if the inquiry is pushed deep enough. For example, the mastery of a geometrical theorem would seem a purely intellectual performance; yet when the learner is bidden to "suppose the triangle ABC to be superimposed upon the triangle DEF," it becomes clear that action, after all, is not really excluded. Facts of this kind justify Mr. Bradley in saying that to reason is to "perform an ideal experiment"; we do so-and-so in imagination and note what consequences would follow. Nor is thought free from the trammels of action even when it soars into the heights of metaphysics—

Where never creeps a cloud, or moves a wind, . . .
Nor sound of human sorrow mounts to mar
Their sacred everlasting calm.

The silent repetition of the sound of speech or (*e.g.*) of a melody is called an *auditory image*, the "mental picture" of an absent object a *visual image*. People differ widely in regard to their power of calling up images and the use they make of them. Some, especially scientific men, who get into the habit of thinking solely in terms of words and mathematical symbols, appear to have no visual imagery. It is, however, probable that all normal children have both visual and auditory images, and that the differences that are found in older persons are due to habit and practice. The

For thought can rise only on the wings of *words*, and, as we shall see, the meaning of the most abstract words is, at bottom, only action, cunningly disguised.

We have here the basis of the well-worn maxim, Learn by Doing; which means that understanding and action are so intimately related by nature that they cannot be sundered without loss—loss that does not fall least heavily on the side of understanding. This, for example, is what Sir J. J. Thomson meant when he observed that Senior Wranglers, on taking a course of practical work in his laboratory, were astonished to find that their formulæ were true! A mathematical truth may be but a tenuous thing, even for a Senior Wrangler, until it gains life and body by incorporation in action. That is why it is hardly possible to overestimate the value of practical work in teaching such subjects as mathematics, geography and science, especially in the earlier stages. Even where practical work is not feasible, a theoretical argument should generally be presented in a setting of imagined experience, rather than in a purely logical exposition.¹ The judicious use of the dramatic method in teaching history is parallel with the direct form of practical work; while to discuss the application of historical and political principles to present-day problems is to follow the indirect practical method which is generally more appropriate in teaching older pupils.² And we have recently insisted on

imagination of "how it feels" to make a movement—*e.g.*, to lift the arm while it remains at one's side, or to stand up while one remains sitting—is called a *kinæsthetic image*. This type of image is referred to in the preceding sentence of the text.

¹ The reader will find in Professor John Perry's writings, in Mr. J. Strachan's article in "The New Teaching," or in the present author's "Teaching of Algebra" numerous applications of this principle in mathematics.

² In one well-known public school the history master used to take his senior boys to some characteristic industrial district to study political and industrial problems *in situ*; in another, local trade union leaders, etc., are invited to visit the school debating society from time to time. There is a danger that such methods may be turned to propagandist purposes that have no proper place in a school, but, if judiciously used, they succeed, as nothing else can, in giving a solid basis to historico-political studies.

the importance of basing moral training on vivid and natural social experience (p. 153). All this fits in, as it ought to do, with what we have learnt about the didactic value of the play-motive.

The old psychology taught that all higher knowledge grows out of the immediate cognitive contact¹ with the outer world which we gain through the senses. Modern psychology insists that the basis is really wider than this; that it includes not only sensation, but also the muscular movements which sensations provoke through feeling. The famous statue which Condillac imagined to become endowed with the human senses, one after the other, would never have gained human intelligence as long as it remained a statue, and so unable to reply by movement to the challenges of the outer world. The physician-teacher Séguin was the first to grasp clearly the pedagogical significance of this truth. He noticed that weak-minded children are often incapable of the simplest organized movements; they cannot grasp and roll a ball like normal children, or follow its path easily by co-ordinated movements of head and eye. With penetrating insight he connected their feebleness of intellect with this deficiency, and sought to ameliorate the former by curing the latter. His method, as is well known, was adapted by Dr. Montessori to be a cardinal feature of the training she prescribes for normal children. In a Montessori school the little people of three and four spend much time in inserting buttons into button-holes, in threading and tying laces, in fitting cylinders and geometrical insets into the holes that match them; and it is claimed that in this way they

¹ We must distinguish between the immediate cognitive contact we have with a thing when we see, hear, touch, smell or taste it, and the indirect cognitive contact we have when we remember or think of it in its absence, using images or words, or when we learn about it through the spoken or written speech of another. There is a parallel distinction between direct and indirect action—for instance, I may go and fetch a thing myself, or move another's muscles to do so by speech or writing.

lay the best possible foundation for higher intellectual achievements.¹

The "sensori-motor reactions" which contain, according to this doctrine, the promise and potency of all human achievement, call for closer examination. Let us consider a typical case. I approach a puppy, lying passively on his side, and stimulate his skin by patting him lightly behind the shoulder. After two or three taps, his hind leg begins to show a rhythmic vibration which soon grows into a vigorous scratching movement. When I cease patting, this movement continues for a moment and then dies away. To understand what has happened here we must look with the eyes of the anatomist and the physiologist below the dog's skin. Beneath numerous spots ("pressure spots") in the area patted, fine white threads arise which can be traced back to the spinal cord that lies within the backbone. On the way thither, they come together to form bundles (the "nerves"), in which they lie side by side, insulated from one another like the wires in an electric cable. Just before a bundle runs into the cord through a "posterior root," making its way between two "vertebræ" of the spine, each thread connects sideways with a minute bulb of nervous matter forming part of a swelling or "ganglion" of the posterior root. Beyond these bulbous masses the threads enter into the cord, and break up into fine branches that are distributed largely round the similar bulbs that teem there.

¹ Miss Margaret McMillan, in her touching little book, "The Camp School" (Allen and Unwin, 1917), maintains that much of the dullness and backwardness of children in a slum district, such as Deptford, is due to lack of training of the basal senses—that is, not only of the eye and ear, but of smell, the temperature sense and the "mother sense" of touch. Only one in twelve of her children could, when blindfolded, tell one strong-scented flower from another. Some would be content to live in a bath of perspiration, always over-clothed; some to remain in the open with blue lips and chattering teeth. "The patience of the poor [she says] is not all patience. It is largely insensibility." To such children a shower-bath, with its powerful appeal to dull senses and flaccid muscles, may mean a veritable beginning of intellectual and moral enlightenment.

Each thread with its bulb constitutes a "neurone" or anatomical unit of the nervous system. The bulb is the "nerve-cell" or "cell-body," the centre of the neurone's life and activity.¹ The thread, from the pressure-spot to the cell-body, is the "axon" or nerve-fibre of the neurone; beyond that point it is the "dendron," breaking up into fine "dendrites." Since the function of the neurones we have just now in view is to carry the nervous stimulation from the skin to the spinal-cord, they are called "sensory," "afferent," or "receptor" neurones, and the ends of the axons, where the "nervous current" was set up by the tapping, are called "receptor organs," or simply "receptors."

The nervous current conveyed through a receptor neurone passes, by way of its dendron and dendrites, into one or more "connector neurones" that lie entirely within the spinal cord. To reach them it must cross the separating surfaces or "synapses" that break the anatomical continuity of the nervous path. The synapses are the seat of a varying resistance, at present little understood though of supreme importance, and serve as valves which permit the current to flow from neurone to neurone only in the "forward" direction. Within the cord it may pass from one connector neurone to another, across the synapses, along a vast variety of paths. To awaken consciousness, it must make its way upward to that expansion of the cord which we call the brain; to produce movement, it must issue from the cord along neurones of a third type, called "efferent," "motor," or "effector." The cell-bodies of these neurones lie *within* the cord, and their axons, leaving the cord by its "anterior roots," take their way towards the periphery in the same nerve-bundles as convey the afferent neurones towards the cord. Along them the nervous current is distributed to the muscles, and there sets up the contractions that cause the movement.

¹ A nervous thread or axon dies if cut off from the cell-body. This fact is largely utilized in tracing the course of a neurone.

It will be seen that every motor neurone may be a "final common path" for currents that reach it by endless different tracks along the connector-neurones of the brain and cord; hence the possibility of the infinite variety of "voluntary" movements that may occur under the control of the brain. But to complete our picture we must note that most anterior roots of the cord also contain connector-axons which make their way to effector-neurones entirely outside the cord. Since these neurones are reached each by a current that arrives, ultimately, along a single line, the effects they excite are not subject to modification by the will. They constitute, therefore, an "involuntary" or "autonomic" system. Organized into three main groups (separated by the nerve-trunks from arms and legs), together with a smaller group in the head, their function is to control the flow of the blood, the digestive movements of the intestines, and the excretory organs, and to bring about the automatic adjustments of the eyes. In addition, there seem to be effector-neurones, associated with each main group of the autonomic system, which control the secretion of the sweat-glands in the skin, the digestive glands, etc.

To return to the scratching puppy. When the nervous currents set up by the patting reach the cord, they must find tracks of low resistance already prepared, along which to flow through the connector-neurones to the effector-neurones of the leg; for it is otherwise impossible to see why the stimulation is followed by scratching rather than by any other movement of body or limbs. Physiologists use the term "reflex system" to describe this innate connection between a group of receptor and a group of effector neurones. In some reflexes—for example, the "knee-jerk," or the blinking reflex that is released when an object suddenly approaches the eye—the mechanism is relatively simple; in others it is exceedingly complicated. For instance, the puppy's scratch-reflex must contain arrangements to secure not merely simple movements, but rhythmic contractions of the "antagonistic"

muscles that cause backward and forward movements of the leg.

But though a current takes more readily paths innately prepared, it is by no means confined to them. Let the reader lay his arm, with palm upwards, on a table, and proceed to lift, at intervals of a second or less, a weight suspended from a finger by a string. He will find that the movement, at first confined to the relevant finger, will spread to the other fingers, then to the muscles of the lower arm and finally to the whole arm and shoulder. In this experiment, due to Dr. McDougall, we must suppose that fatigue gradually raised the resistance of the synapses along the original reflex path, and that the current then began to overflow into neighbouring paths, spreading ever wider as the resistance of these paths also rose.¹ The gradual consolidation of a movement learnt by trial and error (p. 45) shows the opposite process; the resistances along the relevant paths become so much reduced, by successful practice, that we have finally what psychologists aptly term a "secondary reflex."

The first movements of all animals with a nervous system are reflexes, and reflexes form the basis of all the skilled movements they can acquire. Strictly speaking, for instance, a bird does not *learn* to peck, and can fly, without previous training, as soon as its wings and the correlated nervous mechanism have developed to the proper point. Similarly, an infant is born in vigorous possession of the sucking reflex, and discloses others as his nervous system ripens. At first he is contented to lie supine, but a moment comes when nothing can prevent him from sitting up. Later, he will propel himself rapidly across a floor by means of his arms, though he has never seen his parents use that undignified mode of progression. Later still, he stands erect and walks—generally,

¹ McDougall, "Fatigue" (Report of British Association, 1908). Dr. McDougall explains in the same way the progress of intoxication from the liveliness produced by the first glass to the toper's final collapse beneath the table. (*Cf.* p. 75.)

it is true, with the officious assistance of admiring elders, but really in virtue of his walking-reflex. Subsequent achievements are made possible by the synthesis of the primary reflexes into larger systems.

The way in which this synthesis is brought about has been described earlier (p. 120), and has, as regards certain forms of skilled performance, been made the subject of careful experiments. Of these the experiments of Professor W. F. Book on typewriting are particularly instructive.¹ Book recorded graphically the rate of work of each learner, and found that the curves showed typical waves (*c/.* p. 147), corresponding to definite stages in the synthesis of the reflexes. The first stage is the learning of correct letter-habits—that is, of secondary reflexes which, at the moment the typing of a letter is willed, carry the right finger automatically to the right key. As these habits are acquired, the rate quickens, and the graphic record climbs upward. Soon, however, there comes a “plateau” showing a temporary arrest in the increase of speed, followed shortly by another rise. The interpretation is that the original letter-habits are being gathered up into syllable and word habits, in which the series of movements needed to type a syllable or a word are released by a single impulse. While these wider reflex-systems are forming, the partial withdrawal of attention from the individual letters causes errors and delay. It is, however, noteworthy that the letter-habits themselves become perfected only through the formation of the higher habits. Later, there may be a plateau corresponding to the emergence of phrase-habits; but it is naturally less definite and may be absent. During the whole process, imagery of several kinds plays an important part; though, as skill increases, it tends to drop out and to leave the impulse to write a word or phrase to be followed directly by the required movements. It is probably for that

¹ “The Psychology of Skill” (University of Montana Publications in Psychology, 1908).

reason that the best results are obtained by learners who adopt the "touch method" from the beginning, instead of the "sight method" in which the fingers are guided to the keys by the eye. It is *possible*, further, that we have here a justification of Dr. Montessori's practice of teaching children the forms of letters kinæsthetically instead of visually, by making them run their fingers round sand-papered letters and draw the shapes blindfolded.

The general bearing of these results on teaching handwriting has been questioned but seems clear. Some teachers would begin with the word as the smallest unit that has meaning; but we see that if legible and beautiful writing¹ is to be learnt, the child should first establish the habits of lowest order. There is no reason why a "play-way," such as Dr. Montessori's, or more ancient nursery ways, should not be used to give isolated letters sufficient meaning. Book's results warn us, however, (i.) that the child should be allowed to advance spontaneously from single letters to words, and (ii.) that these should be words that he can already read with ease. On the whole, a "phonic" method, in which the child learns to construct words to match their sounds, by putting movable letters together, and afterwards writes them, seems to be indicated.

Such a method implies teaching reading and writing in close association and with letters of the same form. Learning to read involves, in fact, building up *recognition*-habits of increasing complexity corresponding to the increasingly complex movement-habits of writing; so that a child's progress in the sister-arts should illustrate the principles laid down in the first two paragraphs of this chapter. If one stands behind an expert reader, holding a small mirror near his eye, it is easy to observe that the eye does not move continuously along the line, but covers the space in from three to

¹ *E.g.*, the modified mediæval script which now threatens to displace the ugly and featureless modern forms.

five jerks separated by momentary rests. It is during the rests that the recognition takes place, a logically connected word-group being "taken in" at each momentary glance.¹ Thus the normal object of an expert's recognition-habit is a phrase. To this position children must be led through lower recognition-habits, due place being given to the law that a lower habit is perfected only as one passes on to the next higher.²

Cognition, as we have said, begins in the senses. In addition to the anciently recognized "five gateways of knowledge," we must take account (i.) of the temperature and pain-senses whose receptors are in the skin; (ii.) of the senses whose receptors are in the digestive and other inner organs, where their stimulation causes hunger and thirst, the well-being of health and the distress of illness, together with other vague sensations that are closely connected with our sense of personal identity; (iii.) of the kinæsthetic sense, by which we are kept aware of the position and movements of the head, trunk and limbs. The kinæsthetic sense has, in addition to receptors in the joints, tendons and muscles, a highly important group in the labyrinth—a curious organ, deeply concealed within the ear. These are concerned not only in movements of head and eyes, but also in the initiation of a continuous series of reflexes which keep the body normally in a vertical position, and maintain the "tone" of the leg and trunk muscles by whose constant activity is made possible the

¹ See Huey, "The Psychology and Pedagogy of Reading," for accounts of more precise experiments.

² It should be unnecessary to point out that reading should at all stages be *meaningful*, but this elementary principle is often neglected where children are taught in large classes. One comes across children who can "read almost anything," but are yet quite unaware that the printed words convey meaning. The remedy is, once more, the "play-way." The child should be given "secret" instructions in writing which he is to read and carry out, etc. Even older pupils, who receive little but oral teaching, often have surprising difficulty in gaining information from books. The habit, which is, of course, the essential thing in reading, should be deliberately trained from the beginning. It is carefully to be distinguished from reading aloud, which should be treated as an æsthetic art akin to music and drama.

wonderful but little regarded feat of keeping upright. Thus the giddiness of a waltzer is due to unusual stimulation of the labyrinthine receptors,¹ while the muscular collapse of a boxer "knocked out" by a blow on the point of the jaw is explained by the shock to the labyrinth which puts the attitude-reflexes out of action.

The sensations that arise from stimulation of the receptors in the inner organs are characteristically vague and diffuse, and tell us nothing about the objects that cause them. This fact is painfully well known to any sufferer from renal colic or appendicitis or even the "stomach-ache" of childhood. The special mark of the outwardly directed receptor-neurones seems to be, on the contrary, that they *do* yield us information about the bodies that awaken their activity. It is, however, now known that there are in the skin two sets of receptors—the protopathic and the epicritic—of which the former are closely akin to the receptors in the inner organs. This fact was brought clearly to light by Dr. Henry Head, who in a famous but unpleasant experiment permitted a collaborator to sever a nerve trunk supplying a large area of his arm and hand, and recorded what happened as sensibility slowly returned. The protopathic neurones—no doubt the more primitive in origin as they are in function—were the first to be regenerated. While they alone were active, the subject had no power to recognize the size, shape, weight, texture or spatial position of the bodies he touched. A pin-prick caused diffused pain, but no awareness that it was due to an external object, while rhythmic stimuli of any kind were felt as continuous. In a word, all that constitutes the objectivity, the spatial and temporal order, the quantitative as distinguished from the qualitative aspects of sense-experience, returned only with the regeneration of the epicritic neurones.

As the reader may surmise, the two sets of sensory neurones

¹ The odd behaviour of the "waltzing rat" appears to be due to an hereditary peculiarity in the labyrinthine structure.

have different destinations in the brain. The protopathic neurones deliver their nervous currents in the optic thalamus—a nervous mass in the floor of the brain—while the epicritic neurones carry theirs upwards to the cerebral cortex, whose enormous development in man distinguishes him, anatomically, more than anything else, from the lower animals. The difference in the sensations mediated by these “two great receptive centres” is reflected in the character of the reflex movements they control. The reflexes of the protopathic system have the same diffuse, “all or none” character as its sensibility; for instance, the merely protopathic arm *must* withdraw when strongly stimulated by heat or pain;¹ but reflexes involving the epicritic mechanism are subject to the most delicate gradation and the widest variation. Thus we reach the idea of the cortex as the grand instrument of organization and control; the means by which we win, on the sensory side, our vision and understanding of an orderly objective world spread out in space and time, and, on the motor side, the power of endlessly adjustable behaviour and creative skill.

Much of what we have now discovered may be summed up in Professor C. S. Sherrington’s dictum that the nervous system is an integrating mechanism, and the cerebral cortex the supreme integrating organ. But this statement must be supplemented by the equally important remark that the nervous system is also an *analyzing* mechanism, and that its highest analytic functions are performed by means of the cortex. An animal with no nervous system or with only a simple one can have at best but a rudimentary awareness of the world and of itself. To gain more it must be able to pick out and distinguish the different elements and qualities of which the world is composed. That feat is made possible for higher animals by the enormous development of the receptor-system, with its organs differentiated to deal, some

¹ Or the subject must react in some other violent way, as by kicking or screaming.

with light, some with sound, and so on. Similarly, a high development of action is possible only where there is a motor system which enables an animal to achieve a great variety of distinct movements. Thus the function of the nervous system is never purely integrative nor purely analytic, but always *analytico-synthetic*. And this two-fold nature of its activity appears equally in cognition and in action.

We must presently study it in cognition in some detail; but before we do so it will be convenient to offer some remarks on a specially important type of behaviour in which the integrative function appears at its highest. We speak of *will*. In the popular view, will is a distinct power, possessed by different people in different degrees, which is brought on the scene to carry out one's actions or to break down resistance to them.¹ The mistake here is in thinking that will is a *special* power separate from the energy expressed in one's other activities. The power by which I make and ensue a momentous decision is the same as the power by which I pick up a pin or tie my shoe-lace while conversing; what is different is the organization that lies behind the acts. According to Dr. McDougall, will always involves the activity of the self-regarding sentiment (p. 156), in which case we must, apparently, deny it to all animals but man; but whether we do or do not accept such a limitation, we must agree that an act, to be properly called an act of will, must draw its energy not from a small part of our nature, but from some massive, deep-rooted, widely inclusive engram-complex. Thus if picking up a pin expresses merely a habit of tidiness, it is not an act of will; but if my right to pick it up is challenged, or if the pin is in a dangerous or inaccessible position, my self-regarding sentiment may be brought into play, and the act will then be unquestionably an act of will.

¹ It is just to say that something like this view appears to be advocated by Dr. N. Ach, who has studied will experimentally with great care. (See p. 176.)

From this account it should be clear that there can be no "training of the will" apart from the general process by which the sentiments are built up. Hence Dr. Montessori is right in maintaining that to train a child's will we must begin by leaving him free to work out his own impulses. For if he is constantly checked or constantly acts only on the directions of another, there can be no building up of strong sentiments to be the basis of effective and well-regulated conduct. His earlier sentiments will be choked with inhibitions preventing natural action, and, in conformity with Shand's law (p. 146), will tend to pass their unsatisfactory quality on to all later sentiments. Thus we shall produce in the end a man who has never learnt to act from a wide and firmly organized inner basis; a man who will at one time face a critical situation in hopeless indecision, at another will break out in childish and inconsequent action.

The popular view has, nevertheless, a certain basis in fact. People differ immensely in native energy, and this difference comes out most markedly in the highly organized behaviour of will. Moreover, there are important differences in the way in which, in different persons, feeling is awakened by cognition and passes into action. From this point of view James distinguished between the "explosive" type of will in which an idea captures feeling and instantly issues into action, and the "obstructed" type, in which action is delayed by inhibitions. Dr. N. Ach has carried the analysis a good deal farther, bringing it into relation with the doctrine of "temperaments." To the four temperaments or "humours" anciently distinguished as the sanguine, the choleric, the phlegmatic and the melancholic, he adds a fifth, the "cautious" (*besonnen*). The cautious, sanguine and choleric temperaments have in common a high sensitiveness to outward events and influences, together with a strong motor tendency; while the phlegmatic and melancholic temperaments are alike in lacking these qualities. Comparing them from the standpoint

of will, we find that in both the cautious and the phlegmatic temperaments the determining tendencies that set and maintain the direction taken by the action are not only very strong at the outset but also preserve their force with little diminution throughout its course. The sensitiveness and alertness of the cautious person make him welcome action, and give him a certain mobility and adaptiveness during its progress; the phlegmatic person, on the other hand, is slow to move, but when moved, "sets his teeth" and ploughs his way imperterbably to the end. The sanguine person, sensitive and lively like the cautious, embraces opportunities of action with equal readiness and sets out with the same strong determining tendencies. But the strength of the tendency soon falls away, so that he often fails to carry the matter through. Nevertheless, his optimism makes him rapidly forget failure, and he is ready to embark on the next enterprise with the same easy confidence. In distinction from these three types, neither the choleric nor the melancholic temperament is capable of strong determining tendencies. The choleric person, however, cannot "keep out of things," and though often checked by failure due to lack of concentrated effort, is by his sensitiveness spurred on to fresh exertions, and so generally "muddles through somehow." The melancholic person shares the weakness of the choleric without his compensating liveliness of sense and movement. Thus he is both ineffective and apathetic, capable neither of a strong original effort nor of being sufficiently stung by failure to achieve success in the end.

Some psycho-analysts hold that, like the difference between the "introvert" and the "extrovert" to which they partially correspond (p. 145), these differences are set up in infancy.¹ On the other hand, they may be, as is more generally believed, factors in original endowment. In either case they are, by the school age, characters which are alterable with

¹ See E. Jones, "Papers on Psycho-Analysis," 2nd ed., ch. xl.

difficulty, if at all, and when present in a marked degree, must be taken carefully into account in the management of children. Having stated the conditions of the problems they present, we must leave the reader to consider the solutions.

NOTES ON BOOKS, ETC.

C. S. SHERRINGTON, "The Integrative Action of the Nervous System" (Scribners, 1906), is the standard work on reflex action. W. H. GASKELL, "The Involuntary Nervous System" (Longmans, 1916), gives the present state of knowledge of the autonomic system. A brief account of Head's experiment is given in C. S. MYERS, "An Introduction to Experimental Psychology" (Cambridge Manuals of Science and Lit., 1911), while H. HEAD has himself given a non-technical exposition on "Problems of Science and Philosophy" (Aristotelian Society Supplement, vol. ii., Williams and Norgate, 1919). N. ACH's scheme of temperaments is quoted from his interesting lecture "Ueber den Willen" (Leipzig, Quelle and Meyer, 1910). His longer work, "Willenstätigkeit und das Denken" (Göttingen, Vandenhoeck and Ruprecht, 1905), deals fully with "determining tendencies." E. B. HOLT, "The Freudian Wish" (Fisher Unwin, 1915), deals very interestingly with the "behaviourist" view of will, etc. For Séguin see H. HOLMAN, "Séguin and the Physiological Methods of Education" (Pitman, 1914).

CHAPTER XIV

THE DEVELOPMENT OF KNOWLEDGE

It is hardly possible to date or to describe the beginnings of a child's mental life, but it is likely enough that at birth the world is for him, as James said, "a big, blooming, buzzing confusion." His appetites and bodily needs and his dawning instincts determine the points at which he attacks this confusion and begins the long task of clearing it up, while his reflexes are, so to speak, the tools he uses. Passing by the earliest days, let us suppose a child old enough to "take notice," and let that notice, motivated by the instinct of curiosity, fasten, say, upon a bright silver spoon. We all know what will happen; how watching, stretching, grasping, carrying reflexes will be set in motion until, after some "trial and error," the spoon is conveyed to the child's mouth. The reader will not fail to note that the analytic and synthetic powers of which we spoke in the last chapter are brought into play from the first moment of this incident. For, in the first place, the infant picks out the brightness of the spoon from its less attractive surroundings, and, in the second place, the mere perception of it as an object outside himself, more or less definitely shaped and placed, implies, as we saw, a considerable piece of organizing work performed by means of his cerebral cortex. But let us proceed.

Next day the spoon comes again within his ken. He perceives it with obvious pleasure, and carries it once more to his mouth with a dexterity much increased by yesterday's successful effort. His behaviour leaves no doubt that his

cognitive "attitude" towards the spoon is not what it was at first; but in what respects is it different? All that we can safely assert is that, as the child now contemplates the spoon, its appearance is "complicated" or coloured by references to yesterday's experience, so that while the same it is yet not the same. The perceived shape and brightness, the cool feeling when the metal was grasped, the stretching, gripping and carrying, the triumph that attended the success of those operations, and lastly the delight of pressing a cold, hard body between the gums: all these items were, by the infant's analytico-synthetic activity, singled out and integrated into a unitary experience with a definite and coherent form; and when the spoon is again seen, the seeing takes place through the activity of the engram-complex in which that form was registered. In accordance with the general law (p. 53), much, perhaps most, of the activity of the complex remains below the level of clear consciousness; but it does not fail to produce definite effects above that level. Thus the "sense of familiarity" the babe enjoys at the second sight of the spoon may be referred to the fact that, having dealt with the object successfully before, he feels ready to react again; in other words, it probably consists (i.) in incipient tendencies, vaguely apprehended, to repeat the former movements, (ii.) in a revival of the feeling of successful self-assertion that attended them, and, in addition, (iii.) in some revival of the pleasure experienced when the spoon lay in his mouth. These elements fuse with the appearance of the spoon and give it its new character; in the usual language of psychologists, they give it its *meaning*.

Some time later his mother records proudly that baby has shown keen interest in a large wooden spoon lying on the kitchen table, and seemed to prove by his behaviour that he classed the novel object with the familiar silver one. This feat implies a much higher exercise of analytico-synthetic power. For it implies (i.) that the numerous shapes presented

by the silver spoon, when held in different positions, have been registered as a distinct subordinate organization within the "spoon-complex," (ii.) that the similarly varying shapes of the wooden spoon can also awaken the activity of this organization, although there is no other resemblance between the two objects, and (iii.) that the activity thus awakened carries with it enough activity of the spoon-complex as a whole to secure *some* degree of recognition. The qualification "some" is important; for the child's cognitive attitude towards the wooden spoon cannot be precisely foreseen. It may correspond to the thought "I have seen something like this before," or to "This, I feel sure, is a spoon, though I do not know why," or to "This must be a spoon, for though very different from the silver spoon, it has the same shape."¹

We may summarize what we have just said by the statement that the child is able to *abstract* the shape from the other qualities of the spoon, though he need not, in a given case, be aware that he has done so. The part here ascribed to abstraction in the perception and recognition of objects has been illuminated by some interesting experiments of Dr. T. V. Moore.² Moore exhibited to his subjects a series of rows of fanciful figures, each row, after a very brief exposure, being replaced by another. All the figures were different, with the exception that one of them occurred in varying positions in every row. The subject was to indicate when he recognized clearly that the same figure had occurred more than once, and was then to give an account of his states of mind during the experiment. The results showed that the perception of the common figure passed through several stages. There came first a mere awareness that *some* sort of figure had been repeated; then a more or less vague apprehension of its shape

¹ The infant cannot, of course, think these thoughts; but the different cognitive attitudes possible have to one another the same relations as these thoughts have.

² "The Process of Abstraction" (University of California Publications in Psychology, vol. i., No. 2, 1910).

as (for instance) circular or pointed; thirdly, a correct idea of the shape, but with doubt or error as to the orientation; lastly, a true knowledge of its position as well as of its shape.

Dr. Moore concluded that in visual perception the material before the sense is organized under "mental categories," of which some may be of the utmost generality and vagueness, others more specific and precise. We may speak of them as "concepts," or, following Mr. H. Sturt (p. 194), as "patterns" or "schemas"; but whatever name we give them, we must think of them not as passive, but as active things, which direct and govern apprehension just as determining tendencies direct and govern action. Indeed, it is evident that there can be no determining tendency which does not include in itself a pattern or schema of the action to which it prompts. And it will be noted that a schema, like a determining tendency, is the activity of a complex which does much of its work in the unconscious.

Most of the active concepts or patterns with which our minds are filled have been derived by abstraction from experience, but some must be regarded as innate. For example, there is in all human beings a tendency to build their perceptual experience into an outer world of separate "things," moving and acting upon one another in space and time. Here the categories are of the widest generality. On the other hand, instincts¹ in animals and sometimes in man seem to contain schemas of a much more detailed character, as in the case of the bird that builds its nest according to the ancestral pattern. The number and nature of racial concepts lying between these limits is not easily determined. Dr. C. G. Jung points to the curious uniformities in the myths of primitive peoples, and holds that these express "archetypes" or racial categories "which coerce intuition and apper-

¹ Instincts may, of course, be thought of as innate determining tendencies.

hension to forms specifically human.”¹ His view may be pressed too far, but it is clear that our power of seeing and understanding the world around us depends upon a power to read “patterns” into it, and it seems equally clear that some of these must be archetypal in Jung’s sense, though they multiply greatly in the course of experience. Thus a doctor can diagnose a new case of illness, an engineer can see how a new machine works, a policeman can smooth out a difficult tangle in the traffic, because their experience has provided them with categories, concepts, or schemas by means of which they can “take hold of” the situation before them. And, as we all know, this power often works by means of which the expert can himself give but an inadequate account;² for it consists mainly in the activity of complexes below the conscious level.

In considering perception it is natural to give a large place to the facts of vision; but what we have said applies throughout the whole realm of the senses. It is evident, for instance, that to hear a melody is to grasp the musical pattern or schema that the notes express, and that when we recognize it from the opening phrases or played in a different key, we do so in virtue of the pattern registered as a subordinate organization in the original engram-complex. Similarly, in the recognition of a tram-car by its rumble, a book by its “feel,” an orange by its smell, the sensations immediately before the mind are apprehended through the activity of concepts or schemas derived from previous experience. In the rumble the mind reads a moving tram-car; in the odour, the taste and appearance of an orange; just as in a printed book

¹ Jung, “Instinct and the Unconscious” (*Brit. Journ. of Psych.*, vol. x., No. 1, 1919).

² As in the anecdote of the dyer who could not communicate to others the secret of his wonderful power of mixing dyes. The better known story of the judge who advised a junior never to give reasons for his decisions, illustrates the further truth that the “rational” account we give of our actions may be very discrepant from the actual activity of the complexes from which they spring.

it reads what the words mean. In this way while each of us is imprisoned in the circle of his own sensations, we are yet freemen of a common world; though some, being blind or deaf, miss part of it, and a few, like the blind-deaf-mute, Helen Keller, can read it only in terms of the humbler senses.

Perception, the earliest of intellectual activities, is the key by which all the rest may be understood. Philosophers have written as though an almost impassable gulf sundered the humble mental function the animals share with us from the lofty exercise of thought, reserved for man alone. This is but a special case of a misconception which we have already sought to correct (pp. 17-19). Mind uses at all its levels the twin methods of analysis and synthesis; the difference between the perceptions of a dog and the thoughts of a sage is a difference not in the nature of the process, but in its range and complexity, and in the materials with which it works.

Let us examine the main points of this difference. We have seen that in ordinary perception the range of the cognitive act often travels far beyond what is immediately present to the senses: I hear not a mere rumble, but a tram-car; I see not a mere yellow patch, but an orange. How far it may go, even in animals, is shown by the behaviour of a dog who, when his master dons a hat, plainly sees the promise of a joyous scamper out of doors. The cognitive acts of an engineer who grasps the working of a machine, of a farmer to whom sky and wind foretell a change in the weather, of a physician who reads in his patient's symptoms the nature and probable course of the disease, differs from the dog's chiefly in using as its vehicle a schema whose range and complexity is much greater still. Thus one mark of the higher mental act is a higher development of synthesis.

A second mark is increased fineness of analysis or abstraction. An intelligent dog can discriminate between his master's assumption of a silk hat and of a soft hat—reading the latter

as a sign that he is to be taken out, the former that he is to be left at home; but a child's power of abstraction soon exceeds the utmost limits of canine analysis.¹ For instance, a child of eight, confronted with an oblong, measuring, say, 6 inches by 4 inches, and divided up into inch-squares, can readily see by analysis that the squares fall into four rows containing six each, and so learns, without counting, that the oblong contains altogether 6×4 square inches. Moreover, he can carry the analysis to a stage still more significant in its potentiality; for he can see that the property he has discerned in the figure before him must also belong to any oblong whose sides contain each an exact number of inches. In other words, he has the power of ignoring all the circumstances that distinguish this oblong from others, and of attending solely to a property which, since it depends on the shape alone, must be present wherever that shape is found. It is hardly necessary to point out that this higher development of analytic power is the prime essential in mathematical and scientific reasoning. In mechanics, for example, we ignore everything about bodies, except the way they affect one another's movements; in optics we attend only to their behaviour towards light; and so on.

Side by side with the increase in analytic and synthetic power, higher mental acts show another characteristic. The intelligence of animals is, as psychologists say, confined to the perceptual level; that is, they do not, as a rule, concern themselves with situations that are not suggested by objects or events actually before their senses. To this rule there are, no doubt, exceptions. A dog will announce by seductive whimperings that he would like a walk, or may (like the author's terrier) make the hint still plainer by seeking his collar spontaneously and laying it at his master's feet. It is,

¹ Miss E. M. Smith's little book, "The Investigation of Mind in Animals" (Cambridge Press, 1915), gives an interesting account of experiments on the range of intellectual power in animals.

however, a special mark of men that they constantly concern themselves with objects and events which are not before their senses; and this kind of mental activity is what we generally have in view when we speak of *thinking*. In thinking, the mind deals with schemas or concepts cut loose, so to speak, from the things in the perceptual world to which they belong—in a word with *ideas*.

The power to think freely—that is, to entertain ideas without the presence and help of perceived objects—varies greatly with the maturity of the mind, with its acquired habits, and with its familiarity with the subject-matter. A child, for instance, may easily be led to find the general rule for calculating the areas of oblong figures, and in discovering it, is certainly thinking. But it is equally certain that he would not make the discovery at all unless his ideas were supported and their flow guided by contemplation of an actual oblong figure dissected into squares. His mind can treat the particular figure not as particular, but as a symbol of all possible oblongs; yet cannot reach a general truth about oblongs except through contemplation of the symbol. The minds of children and of ill-educated persons do much of their thinking by the aid of things used thus as symbolizing concepts which would otherwise elude their mental grasp.¹ Even educated persons of good intelligence can “see” difficult ideas much more easily when they are presented in concrete symbolism, and there have been minds of the highest order that could work in no other way.² Here is the psychological justification for the use of models in teaching abstruse subjects. Undiscerning persons object to models on the ground that their use deprives the pupil of the stimulus to

¹ The reader will remember that the clownish Lance (“Two Gentlemen of Verona,” ii. 3) could not explain the manner of his parting with his family except by using his shoes, his staff, and his hat as symbols for his parents, his sister and Nan the maid.

² *E.g.*, the great Lord Kelvin, who confessed that he could never accept the electro-magnetic theory of light because he could not devise a model of it.

employ his powers of thought and imagination; but we see that, on the contrary, they are for some minds always, and for most minds sometimes, the best possible means of stimulating activity.¹

The use of pictures and diagrams comes under the same heading; though since they are farther from solid reality than models, they are generally less effective thought-instruments. The lines, colours or shading of a picture or photograph are material objects which the mind takes not at their face-value, but as symbols by means of which it reaches and holds a certain schema or idea about the things portrayed. Similarly, a little boy, busy with his "meccano," gathers from a diagram the schema for constructing, say, an elaborate model of a travelling crane, and could not keep so complicated an idea "in his head" except by repeated reference to the drawing where it is symbolized. The same explanation applies, in principle, to the use of symbols in algebra. An algebraic expression is simply a perceptual object whose form symbolizes some particular relation between numbers; and its use is first to enable the mathematician to hold the concept of this relation in mind, and next to pass from that concept to the concept of another relation which "follows" from the former.²

When a person thinks without the aid of any perceptual object or symbol to guide his thoughts, his ideas are in the full sense "free." All of us can deal in this way with familiar objects and events, recalling the past, looking into the future, or pursuing in idleness the dreams of fancy; and more gifted and powerful minds can thus follow the "way of ideas" far

¹ See John Adams, "Exposition and Illustration in Teaching" (Macmillan, 1909), ch. xiii.

² *E.g.*, the expressions $c = (a + b)(a - b)$ and $c = a^2 - b^2$ symbolize two distinct relations that may obtain between three numbers; and the process of manipulation called "multiplying $(a + b)$ by $(a - b)$ " is the means by which the algebraist proves that wherever the former relation obtains, the second one obtains also.

EDUCATION: DATA AND FIRST PRINCIPLES

into remote realms of abstruse speculation.¹ But even here thought needs the support and guidance of images, which, as we have seen, are mental copies of perceptual objects, including movements. Visual images, in particular, being a direct transcript of material objects, play a very great part in an average person's thinking and reasoning. Many descriptions of things would be almost unintelligible to most people unless they evoked visual imagery, and many arguments consist essentially in devices for calling up more or less definite pictures of the behaviour of things² (see p. 161).

We have reserved until last the most important of thought-instruments—namely, language. Language may be the vehicle of ideas either in the perceptual form of spoken or written words, or in the subtler guise of verbal images, visual, auditory or kinæsthetic. Its use is pre-eminently a social habit, and is found in a rudimentary form wherever animals, under the urge of the gregarious instinct, act together for defence and in pursuit of food. On a superficial view it would appear that, among civilized men, words are purely arbitrary signs whose meaning is learnt by association. But while this account is largely true, it is not the whole truth. Psycho-

¹ The great Sir W. Hamilton, the inventor of quaternions, is said often to have spent hours in mathematical thought unaided by written symbolism.

² The reader may try the following examples upon himself or a friend.

(a) *Description*.—A certain "flying top" consists of three parts: (1) A wheel with spokes like the blades of an electric fan. The hub contains a small hollow cone whose point projects slightly so that the wheel cannot lie flat on a table. (2) A tube, grooved spirally within like a rifle-barrel, and ending in a cone which fits into the hub of the wheel. (3) A rod, bearing a spiral ridge like a screw, which fits into the tube. To start the top, you place the wheel on a table, fit the conical end of the tube into the hub, and holding the rod upright, press it rapidly down into the tube until it reaches the bottom, when you instantly withdraw the rod and tube. The wheel now rises from the table and flies across the room.

(b) *Argument*.—B is a certain distance north of A, C the same distance east of B; therefore C is north-east of A.

The study of such examples may convince the reader that it is important in many lessons to set oneself deliberately to evoke imagery in one's pupils. The teacher who does not himself use visual imagery freely (p. 161) often fails to keep in touch with his hearers, simply because he and they are employing different symbols or vehicles for their ideas.

logical causes have played a definite rôle in the history of word-forms and their meanings; and, in accordance with the law of recapitulation (p. 39), repeat their work at least partially in every child who learns to speak. The behaviour of deaf-mutes shows how natural it is for human beings to find in facial movements, pantomime and bodily gestures, the means of communicating their feelings, knowledge and wishes; and spoken language is, at bottom, but a more delicate apparatus of the same kind and origin. Thus words when they are not emotional (like "oh," "hush") or onomatopoeic (like "splash," "cuckoo") seem ultimately to be oral gestures, sometimes residua of, or natural substitutes for, larger bodily gestures, sometimes "sound-metaphors" of independent origin.¹ A child in learning to speak does not repeat the historical stages that brought the word to its present form; but impulses akin to the original attitude- and gesture-impulses probably do recur, and the spoken word becomes associated with them all the more readily because in its origin it was itself a refinement of attitude or gesture. These wider impulses sink, in time, into the unconscious, but remain part of the buried complexes whose activity gives the word its meaning.²

¹ The words *there—here, you—me*, with their correspondents in a large number of widely diverse languages, seem obviously to embody respectively an outwardly and an inwardly directed oral gesture. The difference between *mamma* and *papa*, which also appears in correlated forms in a great many languages, appears to be a sound-metaphor: the softer sound symbolizing the female, the more vigorous the male parent (Wundt). Observe, too, the suggestion of shaking in such words as *quiver*, *quagmire*; of clumsy movement in *flounder*, *flop*; and the significance of the *gr* in *grumble*, *groan*, and the slang word *grouse* (Pearsall Smith). See references on p. 194.

We are told that there are African languages in which the verbal symbols need to be supplemented by bodily gesture; so that you must, at night, talk beside a fire in order to "see" what a man says.

² In repeating Humpty Dumpty's cryptic verses one may become aware that the "mental attitude" expressed by such words as "if" and "but" is largely a bodily attitude:

And he was very proud and stiff;
He said, "I'd go and wake them, if ——"
And when I found the door was shut
I tried to turn the handle, but ——

This doctrine is supported by the common observation that words originally concrete in meaning tend to become abstract. The word "tend" is itself an example. The Latin *tendo* originally meant "to stretch," and may be regarded as a "vocal gesture" derived from, or at least connected with, a larger bodily gesture imitative of stretching. The use of the word and the gesture became registered together in a single complex, so that when the word was employed alone, it still had behind it the activity of the whole complex. When the need arose to apprehend the subtler facts we express by "tendency," the earlier concept of stretching was used as a symbol by whose aid the notion could be apprehended and communicated. The word would thus come to express the activity of a new complex, but that complex would still contain the older one as its core, and would derive its energy therefrom by "sublimation." In this way we can see how it is possible to understand the meaning of a passage—such as the present paragraph—whose reading evokes little or no imagery except, perhaps, auditory echoes of the words themselves. The words awaken the largely unconscious activity of engram-complexes which the synthetic power always inherent in mind rapidly organizes into a complex of new form and wider scope; and it is this complex, growing as one reads, which determines the "attitude" towards the sentences wherein our awareness of their meaning is felt to reside.

The tendency to employ primitive experiences as means for grasping and expressing the significance of more complicated and subtle facts must now be recognized as almost omnipresent in human mentality.¹ It explains the forms of myth, ritual and religious creeds, it runs riot in dreams, and may be said, in short, to be the key to understanding almost the whole development of civilization (p. 50). In

The reader, remembering pp. 160-2, will see that the meaning of object-names, such as "table," consists largely in the (unconscious) schemas of our activities connected with the objects.

¹ See E. Jones, "Papers on Psycho-Analysis," 2nd ed., ch. vii.

the history of physical science, for instance, nothing is more striking than the way in which men have persistently sought to interpret recondite phenomena in terms of such familiar things as bodily exertion ("force," "energy,"), the behaviour of moving bodies ("atoms," "electrons"), or of water ("ether").¹ Poetic imagination, following a different impulse, uses the same means. The poet is a man for whom the common sights and events of the world are symbols of things which the rest of us could never find without his aid. To the unimaginative man the yellow primrose is a yellow primrose, and "nothing more."²

The foregoing discussion has covered, in principle, all forms of higher intellectual activity. It is, however, desirable to add further remarks upon two—*invention* and *reasoning*—in which the creative aspect of the activity is especially prominent.

An act of invention may either modify an existing schema in some essential details—a classic instance is the act of the ingenious lad who, by attaching strings, made the steam-engine he tended work automatically—or it may produce what is virtually a new schema—as when Arkwright, or some predecessor, transformed the spinning wheel into the spinning machine. But the invented schema, however novel, is never anything but a new synthesis of familiar schemas or their components. Bring together a pumping-engine and a tramway-waggon, and you have a railway locomotive; synthesize the gas-engine with the road-carriage, substituting oil-vapour for gas, and you have the motor-car; and so on indefinitely.

¹ T. P. Nunn, "Aims and Achievements of Scientific Method" (Macmillan, 1906, and *Proceedings of Aristotelian Society*, 1905-6).

² Samuel Butler, who missed no chance of girding at Wordsworth, speaks in his "Alps and Sanctuaries" of "the primrose with the yellow brim," adding "I quote from memory." The Rev. C. A. Alington relates that he had once the joyful experience of reading a copy of the book in which a previous borrower had written "No" against the passage, and had entered in the margin the correct quotation! This delicious anecdote is a perfect illustration of the connection between imagination and humour.

The inventive mind possesses in a higher degree the analytic and synthetic powers common to us all. Unlike routine-bound minds, it readily separates the elements of things from their usual contexts, and it is fertile in new constructions. Above all, it has the energy that expresses itself in the strongly sustained purpose needed to make good use of those gifts.

There is, in principle, no difference between this kind of invention and the invention of a writer like Defoe, who, given a certain imagined situation, produces in the adventures of Robinson Crusoe a plausible synthesis of possible incidents. The only distinction is that the schema of the romancer is for delightful contemplation, not for use. On the other hand, there is a substantial difference between invention and fancy. For fancy, although, like invention, it weaves its schemas out of real materials, takes no heed to make the pattern as a whole congruent with reality.

Reasoning covers much the same ground as invention; for the essence of both lies in the deliberate search for a new schema, and in an intention that it shall be congruent with reality. The lazy boy who made his engine function by itself must have seen that the strings would "work"; Defoe saw that Crusoe could not have goatskin garments without the means of making them. Both, then, reasoned—that is, constructed schemas in which they believed that there was no element contradicted by other schemas derived from experience. Most of the reasoning of science—at least of non-mathematical science—is of this type. For instance, a geologist explains a fossil by the hypothesis that it is the petrified skeleton of an extinct animal that died where it was rapidly covered up by sea-mud or river silt; for this is the only schema, congruent with reality, into which the facts will fit. The reasoning of the physical sciences differs from this type in two respects. In the first place, it is essentially analytic; that is, it does not consider things as concrete wholes, but seeks "laws," such as Newton's laws of motion, or the laws

of magnetic attraction and repulsion, in which certain abstract features of their behaviour may be summarized. In the second place, it seeks, in a manner already indicated (p. 189), to interpret, and to reduce to unity, wide ranges of natural phenomena by means of such symbolic ideas as "force," "atoms," "ether-waves." But, as the scientific reader will see, these subtler developments do not carry it outside the description we have given of the more elementary types.

Reviewing the whole discussion, we may say that self-assertion, as far as it is expressed in cognitive activity, has always the same immediate aim—an aim that may be described as the intellectual control of the world over against which the individual maintains his creative independence. That aim appears, on the threshold of life, in acts of perception; the babe who delights in the brightness of a silver spoon or recognizes it as a toy or an implement, has already achieved some measure of intellectual control over it. But as the mind matures, there grow out of this unconscious immediate aim three lines of conscious purpose, which, though they constantly come together, are perfectly distinct in character. These we may distinguish as practical, æsthetic and ethical. Let us consider them briefly in turn.

The practical tendency of much of our cognition is obvious. It is obvious, for instance, when a traveller inquires the way to a place in order to get there, or when a tyro asks an expert chauffeur to explain the uses of the levers, so that he, too, may drive the car. Scientific inquiry frequently aims directly at practical control, though in some instances the practical motive may be or seem to be absent. A schoolboy who seeks an explanation of eclipses certainly does not expect to be able to bring them about when he pleases; but his mental attitude is, nevertheless, that of one seeking control. It is, in fact, clear that one's mental grasp of eclipses is incomplete until one can at least *predict* when they occur. This remark

shows that the practical motive may lurk, in a subtle form, even in the most "disinterested" scientific thought. The chemist who affects to despise the industrial applications of his science still hungers for the knowledge that gives control over the transformations of matter; the "pure" geologist still presses for the kind of understanding of the earth's structure that we might ascribe to the *demiourgos* who made it. We must, however, admit that at this level the scientific tends to approximate to the æsthetic purpose which we will next examine.

When the aim of cognition is practical, the analytic and integrative powers of mind carry their work only as far as is necessary for the task in hand. The anxious traveller takes note of the features of town or landscape only in so far as they are landmarks guiding him to his destination. A physicist or a chemist limits his observation to facts that may have a bearing on the question he is examining. The distinguishing mark of æsthetic activity is that it seeks after the perfection of the analytico-synthetic process as an end in itself, without regard to any further purpose it may serve. Here, in substance, is the answer given by the Italian philosopher, Benedetto Croce, to the question, What is art?—a question which, from the time of Plato, who regarded art (and condemned it) as a mere imitation of nature, has sorely vexed the philosophic mind. Art and beauty, says Croce, are successful *expression*, or as we have put it, the perfect development of the analytico-synthetic process of intuition.¹ The

¹ Thus what we usually think of as the artist's expression—the actual picture or statue or poem—is not the expression in Croce's sense, but only a record of it and a means by which it can be communicated to others. The true "work of art" is, in his view, the perfect analytico-synthetic process that takes place in the artist's mind. Croce probably undervalues here the intimacy of relation between cognition and action (see pp. 160-1); the artist, we may suggest, arrives at his expression (in Croce's sense) only by expressing it (in the ordinary sense). It follows from Croce's position that whenever we truly "appreciate" a work of art, we repeat ourselves the creative act in which the artist gave birth to it. This corollary is, no doubt, substantially sound, and is very important from the standpoint of æsthetic training. To lead pupils to "appreciate" is not merely to lead them to

artist who creates a beautiful painting of a face or a landscape does not aim at producing a faithful copy of what is there for everyone to see; his purpose is to record the "intuition" or "expression" evoked from him as he contemplates his sitter or the country-side. He may even make a beautiful picture out of what is "naturally" ugly—that is, out of something which frustrates the effort of an ordinary person to see it and to feel it as an individualized whole. And when we have learnt how the artist's vision has transmuted the bare and ugly facts, we, too, may find beauty in them—that is, may be able to contemplate them in a successful act of expression.

Similarly, no one troubles to inquire whether the *Ædipus Rex* or *Othello* are true stories. Yet, as these instances show, there is always in great art a congruence with reality that lies deeper than mere historical truth. That is why great art often has the highest ethical value. Conversely, the beauty we have noted as belonging to the world-wide visions of science springs from the fact that they are necessarily analytico-synthetic processes of great perfection.

This remark brings us to the ethical purpose, where we are on better explored ground. We have already learnt that moral development begins in the compulsion a child feels to bring his impulses and desires in harmony with those of others (p. 150). Thus ethical knowledge is at first a special kind of practical knowledge—being practical knowledge applied to the control of one's own conduct in social relations. But, as his moral insight deepens, he comes to see that, while the end of ethical activity is always individual good, that good can be realized only if it is identified with a universal good. Henceforward, ethical cognition is a search for the universal principles of conduct which *must* be followed though the sky

admire or to take pleasure in a beautiful thing, but to make them become in a sense its re-creators. The reader will note how well this doctrine accords with what was said on pp. 78, 80.

fall. And in this direction, once more, the three ends of cognition may be found to coincide. For the saint, in his moments of greatest moral insight, may feel that he is in touch with the very foundations of the world's reality, and may gain the completest vision of its tragic beauty.

NOTES ON BOOKS, ETC.

E. B. TITCHENER, "Experimental Psychology of the Thought-Processes," is a valuable criticism of recent experimental work on thought, determining tendencies, etc. H. STURT, "The Principles of Understanding" (Cambridge Press, 1915), develops in a most interesting and instructive way the notion of the "schema." The student should also read J. DEWEY, "How We Think" (Heath, 1909). B. CROCE, "Estetica" (1912), has been translated by D. Ainslie (Macmillan). A very clear account of his views is given in WILDON CARR, "The Philosophy of B. Croce" (Macmillan, 1917), and they are compared with those of other philosophers in E. F. CARRITT, "The Theory of Beauty" (Methuen, 1915). On the origin and development of gesture-language and speech, the serious student should consult W. Wundt, "Völkerpsychologie," vol. i, pt. i. (Leipzig, Engelmann, 1904). An excellent semi-popular account of "word-making" will be found in L. PEARSALL SMITH, "The English Language" (Home Univ. Series).

CHAPTER XV

THE SCHOOL AND THE INDIVIDUAL

As our argument has developed we have been led to give increasing weight to the social factors in school life; and the reader may have an uneasy feeling that we have thus drifted away from the position we took up at the outset of our inquiry. To round off our task we must, therefore, consider more definitely the relation between school life and studies and the spiritual growth of the individual pupil.

Few things are more deplorable than the weakening of individuality, the chilling of enthusiasm, the disillusion, that so often attend the progress of a boy through a school which has, and in the main deserves, the reputation of being "good." Such a school rarely fails to level up its weaker members, but cancels much of its good work by levelling down those of richer promise. In part this result is due to forces that cannot be wholly eliminated. The boy is always near to the barbarian, and his societies, if left to themselves, naturally develop the characters of a primitive tribe where custom rules with rod of iron, and eccentricity is ruthlessly suppressed. In part it is due to the excessive use of competition—in which the school reflects one of the greatest evils that afflict the modern world; for competition, like alcohol, though it may begin by stimulating, tends to bring men in the end to one dull, if not brutish, level. But behind and deeper than such causes one may suspect the influence of the erroneous ideas about the relation between the individual and society which were pointed out in the first chapter (p. 3). There is the thought, working

obscurely or openly held, that social conduct involves the sacrifice of individuality, not its enrichment; that it means self-surrender, not self-fulfilment.

The root error here is the assumption that the difference between "selfish" and "social" conduct coincides with the difference between conduct that is, and conduct that is not, motivated by the social instinct. Social factors often play an essential part in the most selfish conduct—as in that of the swindler who owes both his knowledge of human weaknesses and his skill in exploiting them to the possession of strong gregarious impulses. And the most clearly "social" conduct always implies a strong self behind it. For instance, the cultured missionary who cuts himself off from civilization to minister to a degraded tribe in a fever-haunted land, surrenders a great deal, but he does not surrender his self. On the contrary, his conduct is unintelligible except as the self-assertion of an unusually strong individuality.

These examples bring out the true characters of selfish or anti-social conduct. There is conduct which, in the fine words of Kant, uses other persons merely as means, and not also as ends in themselves. This is the sin of the man who condemns others to degraded or empty lives in order that he may grow rich, of the mother who uses the devotion of her children simply for her own ease—in a word, the sin of exploitation in its myriad forms. Again, there is the conduct of persons who, while making use of the gifts and labours of others, deny, in effect, the reciprocal obligation to put something of their own creation into the common stock. One thinks here of the idle landlord or *rentier*, of the literary or artistic dilettante absorbed in the refinement of his own taste, of the great Cavendish concealing his wonderful scientific discoveries. Conduct of these kinds seems clearly to be selfish or anti-social, and anti-social conduct is, perhaps, always of one of these kinds.

As we have seen, developed conduct almost always includes

a social reference, for it issues from a self permeated with social factors. Thus it is easy to hold that social value or "utility" is the one criterion of good and bad conduct. But although this is the safest and best criterion for daily use, it may be doubted whether it is ultimate. It is at least possible that conduct is not good because it is "social," but rather social because it is good. Not to speak of sins of "self-indulgence," which are censured with a severity that takes little account of their probable social results, immediate or remote,¹ we have to recognize the absolute impossibility of assessing the social consequences of our most momentous decisions. Who, for instance, could determine, on grounds of social utility, the nice question whether a given person should devote his life to clearing up the obscurities in *Æschylus* or to improving the practice of intensive agriculture? When we give due weight to such considerations, we find it impossible to judge conduct, in general, by any external criterion, and have to fall back upon the principle that human lives, like works of art, must be judged by their "expressiveness." However we interpret the phrase or conceive the fact, our bodies, or rather our "body-minds," are meant to be temples of the Holy Ghost, and though we are left free, each to work out his own plan, we are bound to make the building as fair as the materials and the powers at our disposal permit. Or, we may say, our ultimate duty is not to let our nature grow untended and disorderly, but to use our creative energies to produce the most shapely individuality we can attain. For only in that way can we be, as we are bound to be, fellow-workers with the Divine in the universe. This canon is not one by which we can measure out our conduct beforehand; for a creation cannot be judged until it has appeared, and it may for a while baffle men's judgment even then. No

¹ The reader may debate with himself the hypothetical case of Robinson Crusoe getting drunk every night, and may easily find in ordinary life casuistical problems of the same type.

one, for example, doubts now that Keats chose rightly when he deserted "plasters, pills, and ointment boxes" for poetry; yet eminent critics of the time held with firm conviction the opposite opinion. But although the canon is not usable like a foot-rule, it may still be the ultimate standard of human worth.

We conclude, then, that the idea that a main function of the school is to socialize its pupils in no wise contradicts the view that its true aim is to cultivate individuality. We have pointed out (p. 8) that this aim does not imply the cultivation of eccentricity, nor assume that all children are potential geniuses. As Carlyle wisely remarks,¹ the merit of originality is not novelty but sincerity, and that merit may be earned by one who is not, in the ordinary sense, original at all. But sincerity is an achievement possible only to those who are free to follow the larger movements of their own nature; to take from others not what is imposed upon them, but what they need to make their own. Hence, while the school must never fail to form its pupils in the tradition of brotherly kindness and social service, it must recognize that the true training for service is one that favours individual growth, and that the highest form of society would be one in which every person would be free to draw from the common medium what his nature needs, and to enrich the common medium with what is most characteristic of himself (see p. 5).

Thus we reach once more the principle (p. 145) that the proper aim of education is positive, to encourage free activity, not negative, to confine or to repress it. What becomes, then, of the concept of *discipline* which is so essential in the traditional ideas about school training? To gain a clear answer to this question, we must first distinguish between discipline and school *order*, and see that though they overlap and indeed interpenetrate, they are derived from quite different psychological roots. School order consists in the

¹ "Heroes," Lecture IV.

maintenance of the conditions necessary if school life is to fulfil its purpose; and, as we saw (p. 61), is most effective when based on imitation and the routine tendency. Discipline, on the other hand, is not an external thing, like order, but something that touches the inmost springs of conduct. It consists in the submission of one's impulses and powers to a regulation which imposes form upon their chaos, and brings efficiency and economy where there would otherwise be ineffectiveness and waste. Though parts of our nature may resist this control, its acceptance must, on the whole, be willing acceptance—the spontaneous movement of a nature in which there is an inborn impulse towards greater perfection or “expressiveness” (p. 31).

Thus the process of discipline is akin to consolidation (pp. 45-6); it may, in fact, be regarded as a higher type of consolidation, differing from the lower type in that it involves some degree of conscious purpose. We may properly speak of the movements of an athlete as disciplined; for they have gained their perfect form and efficiency—in a word, their expressiveness—largely through conscious effort. Similarly, we may speak of a person as disciplined by circumstances when he has deliberately used the lessons of hard experience to give shape to his impulses and powers. But though a person may discipline himself, as those do who rise to greatness in spite of hostile circumstance, yet discipline is, in general, the influence of a wider or better organized mind upon one narrower or less developed. In all cases there is, in a disciplinary process, a definite psychological sequence. First there must be something that one genuinely desires to do, and one must be conscious either of one's inability or of someone else's superior ability to do it. Next, the perception of inferiority must awaken the negative self-feeling with its impulse to fix attention upon the points in which one's own performance falls short or the model's excels. Lastly, comes the repetition of effort, controlled now by a better concept of

the proper procedure, and accompanied, if successful, by an outflow of positive self-feeling which tends to make the improved schema permanent.

We have had (p. 140) a simple instance of this two-phase process in Jack's behaviour during and after his first tram-ride. The discipline a child gains at school from his teachers and his comrades is of the same character. It is a directive influence, which shows him the better way and stimulates him to make it his own. The discipline of a fine school tradition works in the same way. The eager boy is impressed by what he feels, however obscurely, to be an ample and worthy manner of life, and is proud to become an exemplar of it. Nor is there anything essentially different in the discipline derived from school studies, such as mathematics or science or classics. For here again, what the young student should assimilate is the superior control of thought or expression achieved by great investigators or writers. In short, his position is that of an apprentice striving to learn the trick of the master hand.

We can hardly leave the subject of discipline without some reference to the place of punishment in the school economy. Here the essential point to seize is that the intention of punishment should be positive, not negative; it should aim at helping the backslider to do willingly what he ought to do, rather than at preventing him from doing what is forbidden. Even in the treatment of crime it is now well established—though the fruits of the discovery are sadly slow in maturing—that mere repression is no cure, and that the true remedy lies in the “sublimation” of the criminal's misdirected energies (p. 55). Punishment may properly be used as a deterrent against acts, such as unpunctuality and disobedience, that clearly violate the school order which it is the common interest to maintain. But it has no *moral* effect unless approved by the general sense of the community. Disorderly and other mildly anti-social acts are often best punished by

mere exclusion of the offender from the common occupation; the sight of other children happily busy while he is reduced to nauseous inactivity wakens the strongest motive to repentance. This principle does not, however, justify the pernicious practice of "keeping in" children whose naughtiness is an irritability due to boredom, to insufficient sleep, or lack of fresh air or exercise; to cut such a child off from his play is to withhold the specific remedy for his disease. In proportion as an offence assumes the character of a sin, the deterrent and retributive aspects of punishment should become entirely subordinate to the remedial; it should look not towards the unsatisfactory past, but towards the still hopeful future.¹ One may feel shame when made to see oneself in the unpleasant character in which one appears to others, but a real "change of heart" comes only as one secures hold on a better way of life. The wise teacher, then, will not be contented merely to repress the symptoms of spiritual sickness, but will try by all possible means to remove its causes. And, as we have seen, those causes always consist in the disorderly, mal-adjusted working of impulses—attractions and repulsions, conscious, and still more frequently unconscious—which by prudent handling may be redirected into the ways of spiritual health.²

To these few observations we add only one general remark. The conviction, once so deeply rooted in the teaching profession, that punishment and the fear of punishment are the natural foundations of school government, is gradually being recognized as merely a barbarous superstition. Every teacher of wide experience now knows that a school in whose atmosphere the thunder clouds of punishment are always brooding may often show no superiority, as regards

¹ There is much wisdom in Mr. Bradley's epigram: "Only the spiritually rich can afford the luxury of repentance."

² Psycho-analysis is by no means an instrument for a layman. Nevertheless, it is to the results of psycho-analysis that we must look to find methods, at once truly scientific and truly humane, of dealing with the moral lapses of young people.

visible order, over one where punishment is a rarity. Offences must come and must be dealt with, but it is a sound principle to regard them, in general, as signs of mal-adjustment rather than of natural wickedness: that is, to take them as indications that there is something wrong in the curriculum, the methods of instruction, or in the physical or spiritual conditions of the school work and life.

From the general tenor of our argument throughout the book it is clear that while the school must be a society, it must be a society of a special character. It must be a natural society, in the sense that there should be no violent break between the conditions of life within and without it. There should be no cramping or stifling of the citizens' energies, but room for everyone to live wholly and vigorously; no conventional standards of conduct, but only the universal canons and ideals; no academic separation from the interests of the great world, but a hearty participation in them. On the other hand, a school must be an artificial society in the sense that while it should reflect the outer world truly, it should reflect only what is best and most vital there. A nation's schools, we might say,¹ are an organ of its life, whose special function is to consolidate its spiritual strength, to maintain its historic continuity, to secure its past achievements, to guarantee its future. Through its schools a nation should become conscious of the abiding sources from which the best movements in its life have always drawn their inspiration, should come to share the dreams of its nobler sons, should constantly submit itself to self-criticism, should purge its ideals, should re-inform and redirect its impulses. In short, as Mr. Branford has finely said,² the school should be "an *idealized* epitome or model of the world, not merely the world of ordinary affairs, but the whole of humanity, body and soul, past, present and future."

¹ The statement should be understood as including the universities.

² "Janus and Vesta," p. 145.

This conception of the school as both a natural and an artificial society explains why it is difficult, if not impossible, to give an answer, valid in all circumstances, to some questions of educational policy. For instance, there are many who oppose boarding schools on the ground that they cut boys and girls off from their natural life in the home. But to this objection it may be replied that in a well-conducted boarding school there are a concentration of social life and a heightening of the social temperature which, in their disciplinary effect, more than counterbalance the loss of home influence. There is little hope of bringing this dispute to a definite issue. The modern tendency seems on the whole to favour the day school; but the fine tradition of the historic English boarding schools is by no means moribund, and is, perhaps, destined to give birth to institutions¹ that will greatly enlarge its influence on our national life. Meanwhile there is a healthy tendency for day schools to adapt to their circumstances some of the characteristic features of the boarding schools, and for boarding schools to break from their monastic seclusion and to seek a closer contact with outside interests.

Co-education is an equally intractable question. Co-educators aim, in the first instance, at purifying and strengthening the bases of family life by teaching boys and girls to know one another, and at removing, through constant intercourse under natural conditions, the occasions for unhealthy curiosity and premature sexual excitement. And they also count upon a general beneficial influence of the ideals of each sex upon the character of the other, and work for some such fusing of moral traditions as we considered in a previous chapter (p. 152). Those who harden their hearts against these ideas lay stress on the² natural tendency for adolescent boys and girls to move apart and to develop unhindered their own

¹ For example, to boarding schools intended, like the Caldecott Community, to give to children of the working classes something of the advantages of public school life.

ways of life.¹ This tendency, they maintain, is a plain indication that the special virtues of the sexes are, at least in the later years of school, best cultivated where neither sex is distracted by the presence of the other. That co-education in childhood is a sound policy is, however, a view rapidly spreading, and there are few competent judges who do not deprecate anything like conventual segregation in the years of adolescence. In sum, we may say that the question how far free association of the sexes in work and play is deliberately to be limited or encouraged can hardly be decided without a completer collation of the evidence than seems at present available.

The issue takes a different form in the controversy about the respective merits of a "general" and a "vocational" education. The upholders of vocational education are on firm ground when they emphasize the strong desire of the adolescent to lay hold of the realities of life (p. 87), and their opponents are in a correspondingly weak position when they deny that training for a specific occupation can have educational value. In discussing the question we must take care not to cloud the issue by considerations relevant only to the present imperfect state of society. At the moment, we have before us this curious spectacle: that while schools which have been the strongholds of "liberal culture" are hastening to fit their curricula to the needs of modern industry and the professions, the strongest opponents of vocational training are among those who speak for labour. The attitude of these is easily intelligible. On the one hand, they claim for the poor the heritage of culture from which they have so long been unjustly excluded; on the other hand, they think they see behind the proffered gift of vocational education the hand of the exploiting employer. Let us be clear, then, that the merits of vocational training are here to be debated upon purely educational grounds. From that standpoint, it is

¹ Cf. Slaughter, "The Adolescent," p. 28.

evident that some forms of vocational training are at once excluded from the purview of the school. It is useless to train a boy to be a policeman or a tram-conductor, wrong to train a girl with a view to her making cardboard boxes all her life. But when it is a question of training a future naval officer, a mariner, an engineer, a cabinet-maker, a builder, a farmer, the decision may be very different. Such occupations meet no trivial or transient needs. They have behind them a dignified history and a distinctive moral tradition. They have nursed fine characters and given scope to noble intellects and splendid practical powers. They cannot be worthily carried on without scientific knowledge or artistic culture. To school a boy in the tradition of one of these ancient occupations is to ensure (if it suits his *ingenium*) that he will throw himself into his work with spirit, and with a zeal for mastery that schoolmasters usually look for only in the elect. And it does more. Work which carries a boy directly towards the goal of his choice, work whose obvious usefulness gives him a sense of dignity and power, often unlocks the finer energies of a mind which a "general" education would leave stupid and inert. The boy's whole intellectual vitality may be heightened, his sense of spiritual values quickened. In short, the "vocational" training may become, in the strictest sense, "liberal."

We come, then, to much the same conclusion as before. Vocational education, if conducted in a liberal spirit, is permissible, but cannot be made universal. On the other hand, in its concentration of interest on matters whose social value is evident, in its strong appeal to the practical activities, it contains elements which should, in some form, have a large place in every educational scheme.¹

The question how long school education should last need

¹ Professor Dewey's "School and Society" is a powerful plea for basing the education even of young children upon the study of essential arts and occupations. His argument may be pressed too far, but its general validity is beyond question.

not detain us, since it was, for this country, settled by Mr. Fisher's great Act of 1918. We now recognize, at least in principle, that "youth is the time for education," and that youth, even the youth of the poor, lasts until the age of eighteen. University education excluded, there are three natural educational periods corresponding to the three major waves of physical and mental growth (p. 147). First, there is infancy, merging into childhood between six and eight. This is the period for education in the home or the nursery school, where Froebel and Montessori should be the presiding deities. Next comes the wave of childhood, whose force is normally spent at an age not far from twelve. This should be for all children the period for "primary education": that is, for a common scheme¹ of instruction and training that meets the intellectual and moral needs of childhood and supplies the indispensable basis for the education of youth. Lastly, there is the wave which carries the boy or girl through adolescence, to the dawning of manhood or womanhood about the age of eighteen. This marks out the period of "secondary education." The extension of this name to all forms of post-primary education is, admittedly, a violation of present usage, but is, nevertheless, highly desirable. For it emphasizes a fact whose full recognition would be one of the greatest of educational reforms: namely, that the problems of educating youth—whether the youth of the aristocracy in the public schools or the youth of the slums in the new continuation

¹ It should be much nearer to the curriculum of an enlightened elementary school than to the curriculum still imposed upon preparatory schools by the demands of some public schools. In other words, it should exclude the premature study of such subjects as Greek, Latin and Algebra. The only point really debatable is whether it should exclude French. The majority of the Prime Minister's Committee on Modern Languages were in favour of such exclusion from the standpoint of efficiency in teaching the language; but an important minority dissented.

In the present state of society, the primary schools attended by the poor are necessarily burdened with tasks that are discharged in the homes of the better-to-do. But this fact does not entail or justify any serious departure from the general principle laid down above.

schools—are but variants of a single problem: the problem of dealing fruitfully with a life-period whose central fact is adolescence. This view does not exclude wide variations in curriculum. It implies only that these variations are no longer to be social distinctions, but are to be based solely upon differences in the ability, *ingenium* and needs of the nation's youth. Thus it implies, among other things, that the rich man's practically minded son, whose powers are starved under a literary regimen, would, as a matter of course, find salvation in a technical or craft school; while the noble tradition of the English "grammar" schools would in time assimilate the modern "central" schools—now treated, anomalously, as "elementary" schools, but clearly destined to be the secondary schools of the people.¹

We come now to the last of our problems: the problem of the curriculum. Upon what principles are we to decide what is to be taught and the spirit of the teaching?

The most obvious criterion is that of usefulness. While the plain man generally likes his children to pick up some scraps of useless learning for purely decorative purposes, he requires, on the whole, that they shall be taught what will be useful to them in after-life, and he is inclined to give "useful" a rather strict interpretation. Let us beware of despising his view; for at bottom it is thoroughly sound. If he could think his thoughts out clearly, he would often be found to be not an enemy of culture, properly understood, but only of the academic folly that cuts culture off from its roots in common

¹ Purely administrative questions are outside our province. The author may observe, however, that he has long advocated a "clean cut" across the educational system at the age of eleven to twelve. Education below that age should be treated definitely as the education of children, and should be brought much more than at present under the control of women. After that age, the curriculum of boys and girls who do not enter upon a full-time "secondary" or "technical" course should be brought into definite relations with the course in the continuation school which they will attend from the age of fourteen or fifteen onwards. In other words, the course for all young people, from eleven or twelve to the end of their schooling, should be thought out and administered as a continuous whole.

life. He is right in thinking that this tendency—the besetting temptation of the schoolmaster in all ages—does untold harm. The man who would expel the ancient classics from our schools is a less dangerous Philistine than the man who treats their pages chiefly as material for “mental gymnastic”;¹ nor is his modern rival, the teacher of science, always guiltless of what is, at bottom, the same sin.² Thus lay criticism, even when imperfectly informed, is valuable if only because it constantly brings us back to the true function of the school in relation to society (p. 202), and challenges us to examine the relevance of our teaching to the needs of life.

The criterion of usefulness is, however, not always easy to apply. Take mathematics—a subject in whose usefulness the average parent has complete faith. There is no doubt that a certain power of handling figures is a very desirable accomplishment; any person is likely often to be embarrassed if he cannot cast accounts, determine his profits and losses, and check his change. But it is difficult to show that the majority of people will ever need much more mathematical skill than this. How then are we to justify the universal study of the abstruser parts of arithmetic, to say nothing of the geometry and algebra that are “useful” only in certain professions? Nonplussed by this difficulty, the plain man will generally admit that, though some kinds of learning may not be directly useful in life, they may be indirectly useful in as much as they give valuable “mental training.” But that

¹ “The trade in classic niceties,
The dangerous craft, of culling term and phrase
From languages that want the living voice
To carry meaning to the natural heart;
To tell us what is passion, what is truth,
What reason, what simplicity and sense.”

WORDSWORTH: *Prelude*, Bk. VI.

The whole poem is an invaluable document for the theory of education for individuality.

² Cf. “The New Teaching,” ch. v. A brilliant student recently informed the author that while at school she never conceived science as having reference to anything that happens outside a laboratory!

position once conceded, the schoolmaster has licence to indulge to the full his inveterate penchant for formalism. He may teach uninterested boys to construe Latin, because although they will forget the Latin at the earliest opportunity, they will have acquired "exactness of thought" and the priceless power of conquering difficulties; he may make them spend weary hours in "simplifying" formidable algebraic expressions, because in that way one gains "accuracy of mind"; in short, he will claim the right to continue doing all the things that seem so unreasonable to the unenlightened outsider.

Here is the famous doctrine of "formal training," which asserts that facility acquired in any particular form of intellectual exercise produces a general competence in all exercises that involve the same "faculty." Its paradoxes were exposed by Professor John Adams by a *reductio ad absurdum* that will always be one of the most delightful passages in pedagogic literature;¹ and its truth has been tested—and found wanting—in many instances where it could be tried at the bar of exact experiment.² Yet it is difficult to suppose that there is no truth in a view which holds so firm a grip upon teachers and has seemed unquestionable to many acutely observant minds. In what, then, does its truth consist?

Our study of discipline (p. 128) suggests an answer. A subject such as mathematics represents a tradition of intellectual activity that has for centuries been directed towards a special class of objects and problems. In generation after generation men, sometimes of outstanding genius, have studied those objects and worked at those problems; accepting, correcting, expanding the methods and knowledge of their predecessors and handing on the results of their own

¹ "The Herbartian Psychology applied to Education," ch. v.

² Dr. W. G. Sleight's experiments (see p. 220) seem to prove conclusively that memorizing a particular kind of material produces no *general* improvement of memory.

labours to be treated in the same way. There has grown up thus a distinctive type of intellectual activity, exhibiting a well-marked individuality, and informed by a characteristic spirit. The student who is thoroughly schooled in the subject will make this spirit his own; the ideas and mental habits proper to it will become ingrained in his nature, and he will tend to bring them into play wherever they can be applied. A lawyer, for instance, will reveal his legal training in treating any question of general rules or the estimation of evidence, however remote it may be from his professional interests—as Gilbert of Colchester said of the great Bacon, a Lord Chancellor will write on science like a Lord Chancellor. So a modern chemist may be heard to complain of a fellow-investigator, trained in the sister-science, that he attacks chemical problems like a physicist.¹

The history of thought constantly exemplifies the same principle. For example, Newton, preoccupied by ideas of gravitational attraction, carried the "astronomical view of Nature" into all departments of his scientific studies, and so laid the foundations of modern molecular physics and atomic chemistry. And not only so; it is not extravagant to say that the thinkers of the eighteenth century, schooled in the Newtonian ideas, dealt in what we may call the astronomical spirit even with political and social problems; just as their successors, schooled in Darwinism, have dealt with them in terms of the biological notion of evolution through natural selection.²

We conclude, then, that the training produced by an occupation or a study consists primarily in a facility in apply-

¹ Mr. G. K. Chesterton has somewhere giped at the man who would decide the question of human immortality from the standpoint of an electrical engineer. But can an electrical engineer do otherwise? We can none of us escape from the habitudes and outlook that belong to our training. That is why men must differ in opinion to the end of time, and why large ranges of truth will always be inaccessible to each of us.

² Mr. Branford points out what loss our national life has suffered through the modern degradation of agriculture, which has deprived it of one of the most valuable sources of trained intellect and judgment.

ing certain ideas and methods to situations of a certain kind, and in a strong tendency to bring the same ideas and methods to bear upon any situations akin to these. If to this statement be added what we have said about the permanence of the qualities generated in a sentiment (p. 146), the reader will have before him practically all the facts about "mental training" that will stand examination.

Our view of the curriculum now shapes itself as follows. The school must be thought of primarily not as a place where certain knowledge is learnt, but as a place where the young are disciplined in certain forms of activity—namely, those that are of greatest and most permanent significance in the wider world. Those activities fall naturally into two groups. In the first we place the activities that safeguard the conditions and maintain the standard of individual and social life: such as the care of health and bodily grace, manners, social organization, morals, religion; in the second, the typical creative activities that constitute, so to speak, the solid tissue of civilization. The latter can be easily identified. What a loss civilization would suffer if all that the words "art" and "science" stand for were obliterated! What a poor thing it would be if the poet ceased to dream and sing, if there were none to "handle the harp and pipe," if the hand of the craftsman forgot its cunning!

In the school curriculum all these activities should be represented. For these are the grand expressions of the human spirit, and theirs are the forms in which the creative energies of every generation must be disciplined if the movement of civilization is to be worthily maintained. Taking the second group first, every complete scheme of education must comprise (i.) literature, including at least the best literature of the mother-land; (ii.) some forms of art, including music, the most universal of the arts;¹ (iii.) handicraft, taught with emphasis

¹ The inferior place now given to art is one of the gravest defects of the curriculum, especially in secondary schools.

either on its æsthetic aspect, as in weaving, carving, lettering, or on its constructional aspect, as in carpentry and needle-work; (iv.) science, including mathematics, the science of number, space and time. History and geography should appear in it in a double guise. On the one hand, history belongs with literature as geography belongs with science. On the other hand, they should have a central position in the curriculum as the subjects in which the human movement is, as such, presented and interpreted: history teaching the solidarity of the present with the past, geography the dependence of man's life upon his natural environment, and the interdependence of human activities all over the globe.¹

The activities of the first group cannot, from their nature, be treated as "subjects," though they should be inspired and nourished by the pupil's studies and must to a varying extent be guided by definite teaching. Physical health and bodily grace, for instance, cannot be taught as French is taught, though, as regards health, the pupil should gain hygienic ideals and knowledge in his science lessons, and, as regards bodily grace, there may be lessons in "eurhythmics," in addition to the training of voice, gesture and carriage which will be gained in the dramatic and oratorical exercises that will form part of his literary studies. Similarly, the pupil will learn the ideals of government and social organization in the exercise of his duties as a citizen of the school society, though his lessons in history ("civics") should here have much direct and indirect influence.

Of religion substantially the same things must be affirmed. Few will dispute the assertion that no department of school activity is in a more unsatisfactory state than "religious training." It would be unjust to charge upon the schools a

¹ Cf. J. Fairgrieve, "Geography and World Power," pp. 343-44 (Univ. of London Press, new ed. 1919). The cultivation of language, with the dependent arts of reading and writing, is not mentioned specifically in our list, because, although it must have its separate lessons, it is so fundamental as to be involved in practically all the activities of both groups.

fault in which they simply reflect the confusion and bewilderment that weaken the spiritual energies of all the civilized peoples. There is, however, no hope of remedying the disaster, until the character and history of religion as a natural activity of the human spirit have been properly analyzed, and a teaching procedure based on that analysis has been worked out and courageously applied.

It would be arrogant to offer here more than a few tentative remarks upon so tremendous a theme. In religion there are two things, carefully to be distinguished. One we may call the religious spirit; the other is theology, which is a theory of the objects that evoke the religious spirit. No man in whom the religious spirit stirs can altogether avoid a theology. Atheism itself is a religious theory—one that excludes God, because, like Laplace's cosmogony, it finds no need for that hypothesis. The essential marks of the religious spirit are the recognition that there are objects of supreme and universal worth which rightly claim our reverence and service, together with a sense that, though in our weakness and unworthiness we must ever be their "unprofitable servants," yet to deny their claims or to fail in loyalty to them is shameful and dishonouring. Thus a man may reveal the religious spirit in devotion to truth or to art, or in the loving service of his fellows; such devotion and service being felt, as we have said, as a Divine charge which he may not refuse, though its form, varying with the form of one's individuality, need not be the same for him as for another (p. 197).

The religious spirit, like all large movements of our nature, inevitably takes on a social character. Men who serve the same ideals will come together to share the warmth of their devotion or to confirm their faith, to preach or to hear their gospel. Thus the religious spirit will always have its church, if it be only an "ethical society" or an art club. And where there is a church there will surely grow up a ritual—that is, some form of routine charged with spiritual symbolism (p. 64).

In religious training the first thing is to awaken and feed the religious spirit. It often finds its nutriment in strange places. It has, for example, been justly remarked that boys, at an age when they might seem spiritually dead, pursue games with what can only be described truly as religious fervour. To "play the game" and to "be just and fear not" are for them completely equivalent expressions. A wise training would deliberately set about to sublimate this religious energy into wider social forms instead of leaving it locked up in its primitive narrow channel.¹

Of school studies, literature is from the present standpoint the most important; for

books which lay
Their sure foundations in the heart of man

have more power than anything, except the contagion of a noble character, to heighten the sense of life and of its values. It is for this reason deplorable that the reverence that set the Bible apart as a book by itself has largely defeated its own aim. In the interests of religious training nothing is more desirable than that the Bible should be removed from its unnatural isolation, and restored to the company of books read and loved for their own sake. And if we should not forever treat Bible poetry and story merely as occasions for moral disquisition or theological interpretation, but should let it deliver its own witness, quietly, to man's spiritual experience, so, when we desire to appeal specifically to that experience, we do unwisely to confine attention to its pages. There are many fervent Christians who count the dialogues of Plato among the documents of their faith.²

¹ The exaggerated cult of athletics too often does the latter. It is instructive to observe that a man who is in most respects a reprobate may still show in "sport" a quasi-religious sense of duty and honour.

² A headmaster friend tells the author that one of his prefects recently chose as the "lesson" for the day a passage from the *Phædo* which he was at the time reading in class. Such an incident illustrates well the natural catholicity of the adolescent, as well as his sensitiveness to the spiritual value of literature.

Upon the ritual aspect of school religion we can say here nothing more than is contained or suggested in a previous chapter (Ch. VI). The standing danger with regard to school "services" is the one to which Wordsworth refers so scathingly in his lines upon compulsory college chapel:

Was ever known
The witless shepherd who persists to drive
A flock that thirsts not to a pool disliked?

and it can be avoided only by courageous and candid study of the actual spiritual needs of young people of different ages.

As we come to what we have called theology, we approach by far the most difficult problem, the one with which it is least possible to deal profitably. There are here two hopelessly discordant policies. One is the policy of those who hold that a school should draw its whole life from some historic religious society with its centuries of experience and its traditional creed and ritual; the other, of those who would leave the duty of giving definite shape to children's ideas about the source of the Divine to the churches and home teaching. These conflicting views and the several compromises between them we must leave as they are. We must, however, insist that success here, as elsewhere in education, can be hoped for only if the concepts offered to young people are adjusted to their actual experience and state of development (p. 153). Neglect of this principle must often set up complexes which will later reveal themselves in the form of hostility to all religious ideas—a phenomenon with which those who have the confidence of adolescents are familiar.

The subjects of the curriculum are, we have said, to be taught as *activities*. This means, for example, that in teaching science our aim should be "to make our pupils feel, so far as they may, what it is to be, so to speak, inside the skin of the man of science, looking out through his eyes as well as using his tools, experiencing not only something of his labours, but

also something of his sense of joyous intellectual adventure." In short, all subjects should be taught in the "play way," care being taken that the "way" leads continuously from the irresponsible frolic of childhood to the disciplined labours of manhood (pp. 83-88). In this process there will naturally be, in all the subjects, stages showing a community of character, and analogous to stages in their historic development. The first is a stage whose characters are summed up in the "pleasure-pain principle." This is represented by "nature study," and by the love of myth, legend and marvellous travellers' tales, the common matrix out of which the pursuit of literature, history and geography are to grow. Gradually the "reality principle" asserts its sway. History becomes separated from story as the tale of what has really happened, and story itself must have verisimilitude; interest in science becomes a passion to understand how machines work, how things are made, how the life of plants and animals is sustained. In adolescence the synthetic activity involved in the pupil's intellectual adventures often becomes their most marked feature. His imagination is captured by the majestic generalizations of science, he seeks a synoptic view of history, and takes pleasure in the logical completeness of a geometrical system.

It would be out of place to follow these ideas into their applications. There is, however, a last general question which must not be set aside. The school, as we have pictured it, is a select environment where the creative energies of youth may work towards individuality under the best conditions. Does that conception imply that every pupil shall be free to take from it or to ignore whatever he pleases? If so, would not education be reduced to an anarchy offensive to common-sense, corruptive rather than formative of character? If not, does not the principle we have so persistently asserted turn out to be but a high-sounding phrase?

Happily for our comfort, we need accept neither horn of this alarming dilemma. Of a child it can generally be said with more truth than of any man, *humani nil a se alienum putat*. A normal child's appetite is as varied as it is vigorous, and he can rarely resist the impulse to emulate another's exploits. Thus it is not often difficult to make him take his intellectual meals, provided the fare is properly chosen and attractively set out. As he grows older, other normalizing factors come into play: shame at ignorance or inferiority, zeal for the honour of his form or house, a sense of duty, a desire to please his teachers and a readiness to accept their point of view, and on top of these, the tendency to do the accepted thing because it is accepted. Still later, at the age when, under the existing order, specialization is held to be desirable, caprice is checked partly by the pupil's knowledge that certain subjects, some perhaps distasteful, are necessary ingredients in his professional studies, partly by his discovery that the subjects nearest to his heart cannot be pursued far without the help of others—as a student of history or science finds that he cannot get on without some grinding at foreign languages. Thus it is safe to predict that a schoolmaster bold enough to dispense with all compulsions and skilful enough to maintain the proper atmosphere would find that, under the influence of these forces, things would settle down to much the same outward condition as before. But, while no miracles would happen, and boys and girls would remain boys and girls, sometimes idle and sometimes wayward or worse, there would be in the school life as a whole a sincerity, a vigour, a dignity, that are hardly attainable under the authoritarian tradition.

The reader may press the case of a pupil who withstands the social forces tending to drive him to naturally distasteful studies. Is he to be allowed to leave school ignorant of an essential subject simply because he chances never to have felt its attraction? It would be fair to counter this question

with another. Does the disaster here contemplated never happen under the present system? Do we really succeed in forcing unwilling students to assimilate what we think they ought to know? But the *tu quoque* argument generally covers an attempt to evade an issue. Let us face the issue and admit that in our ideal school the ultimate veto lies with the pupil. There are considerations that will make this state of affairs seem less scandalous than it at first appears. A pupil who resists the appeal of a subject has often been known to turn to it later with great zeal, and soon to make up the headway he had lost. This observation, which every experienced teacher can confirm, should convince us that the apparently wayward movements of a child's mind are generally controlled by deep currents of his being which it is highly imprudent to ignore (see pp. 54-6). If the resistance persists to the end, it is better to cut the loss rather than to do violence to the pupil's nature.¹ After all, if we once admit that minds of varying types have an equal right to exist, we shall be ready to see that the interests of a boy or a girl are rarely so erratic as not to offer the basis of a synthesis of studies that will perform all the essential functions of an education. Moreover, though it may seem to a teacher deplorable that a pupil should leave school with wisdom at one of her main entrances quite shut out, this feeling expresses a professional prejudice rather than the judgment of the greater world. The world, indeed, is widely tolerant of ignorance in most matters, provided it is balanced by competence in others. And here we must always remember two highly significant facts: first, that rebels against the Procrustean tactics of the schoolmaster have, in numberless instances, proved surprisingly competent in after-life; and, secondly, that most of these, including some who have placed the world

¹ At least one headmaster of an important public school has advocated letting a boy drop the study of all languages but his own if he shows a persistent distaste for them.

deeply in their debt, so far from repenting of their youthful intransigence, have continued to be the severest critics of the system against which their inarticulate protests were once raised in vain.

It must be admitted that schools of the type we have considered in this chapter at present flourish most successfully in Utopia, where teachers are all men and women of character and genius, where administrative difficulties scarcely exist, and, above all, where the school is the organ of a society infinitely more enlightened than our own. The fact is, however, irrelevant to the value of our argument; for it is the proper function of an ideal to point beyond the range of present possibility. The only question really relevant is whether it points in the right direction. That question must be left to the judgment of the reader, who will decide whether we have justified the position outlined in the first chapter, and shown it to be firmly based upon the nature and needs of man and society.

We stand at an hour when the civilization that bred us is sick—some fear even to death. We cannot escape from the duty of seeking a cure for its distemper, any more than from the responsibility that lies, in some measure, upon us all of having brought it to its present pass. But however good our will, however happy our inspiration, the problems we and those who came before us have created are problems we cannot hope ourselves to solve; they must be solved, if at all, by the generations that will take up our work when our place knows us no more. Thus the question we have debated is of no mere academic interest. It concerns all who would fain believe that men are not wholly the sport of circumstance or the puppets of fate, but that their own wills shape the decrees which determine, slowly yet inevitably, "the doubtful doom of humankind." To all such it must be important to be assured that though our children cannot build a fairer world

on any other foundation than our own, yet they are not bound, unless in our folly we will have it so, to repeat forever our failures; that they have in them a creative power which, if wisely encouraged and tolerantly guided, may remould our best into a life far worthier than we have seen or than it has entered into our hearts to conceive.

NOTES ON BOOKS, ETC.

"Education Reform" (P. S. KING, 1917) contains reports by the present author and others dealing more fully with points of curriculum and organization touched on in this chapter. W. G. SLEIGHT, "Educational Values and Methods" (Clarendon Press, 1915), contains the best review of experiments on formal training with a discussion of their educational bearing. The doctrine of the curriculum sketched on pp. 211-12 is closely similar to that given in B. BRANFORD, "Janus and Vesta" (Chatto and Windus, 1916), a masterly work full of profound reflections on educational questions. PROFESSOR JOHN DEWEY's works (especially "The School and Society" and "Schools of Tomorrow") should be known to all students. On religious instruction see two wise and eloquent little books by E. T. CAMPAGNAC, "Converging Paths" and "Religion and Religious Training" (Cambridge University Press, 1916 and 1918). T. RAYMONT, "The Use of the Bible in the Education of the Young" (Longmans, 1911), is an eminently useful and suggestive work. H. BOMPAS SMITH, "Boys and their Management at School" (Longmans, 1905), though written from a more conservative standpoint than the present work, contains many excellent observations on punishment, etc. G. BERNARD SHAW's essay on Parents and Children, prefixed to the volume of plays entitled "Misalliance," is a valuable tractate on several questions raised in this chapter and throughout the book.

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